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ORIGINAL CONTRIBUTIONS

MODERN ASPECTS OF THE ETIOLOGY AND TREATMENT OF BRONCHIAL ASTHMA*

George Piness, M. D.
LOS ANGELES, CALIF.

The writer's object in presenting this paper is to discuss the subject of bronchial asthma from the standpoint of protein sensitization, which is comparatively recent, but a subject upon which much has been written. But despite all the literature that has been published, the use of cutaneous tests as an aid in diagnosis and treatment of alergic conditions is still limited, due to the scepticism as to its value and to the difficulties encountered in obtaining protein for this work.

Coca[1] defines the hypersensitive state as one of specific or particular reactivity with characteristic symptoms to the administration of or contact with any stubstances in a quantity which, to most of the individuals of the same species, is innocuous. He amplifies this by further stating (1) the characteristic symptoms are generally different in the different animal species for the same group of substances; (2) they are uniform in any one species for various substances; (3) where the exciting agent possesses a normal physiologic action, for example the drugs, the symptoms of this action are, with a few exceptions, different from those of hypersensitiveness to that agent. This includes the tuberculous reaction, because the symptoms are the same for all species.

The same writer describes the phenomena of true hypersensitive as being those of anaphylaxis and those of allergy. Anaphylaxis is defined by the same author as hypersensitiveness induced and experimental, not inheritable and due to the presence of specific antibodies in certain tissues. Allergy, on the other hand, is a natural inherited condition of hypersensitiveness which affects only human beings, and is not dependent in any way on immunologic antibodies. Coca believes that true anaphylaxis is a very rare occurrence in man.

Blackfan[2] states that the hypersensitive state may be present at birth, this being the rule in the greater percentage of cases, and that such allergic conditions as asthma, eczema, urticaria and hay fever may develop when the first protein is given. He states further that hypersensitiveness may be acquired, transmitted by mother to child or may be inherited. The writer[3] has observed in his series of cases that there were at least 27 per cent of cases who gave a history of heredity.

In studying a case of asthma, before a definite diagnosis of the same is made, one must rule out that group of conditions which so closely resemble it, and before entering into a discussion

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* Read before the Forty-eight Annual Meeting of Oregon State Medical Association, Portland, Ore., Oct. 26-27, 1922.

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of diagnosis the various classifications as given by various writers will be discussed with you.

BRONCHIAL ASTHMA

Classification of Walker

Sensitive to proteins—Asthma thruout the year, due to animals, foods, bacteria; seasonal asthma due to pollen.

Nonsensitive to proteins—Asthma thruout the year, due to bacteria; seasonal asthma due to bacteria.

Classification of Cook

1. Anaphylatic
   (a) Respiratory
      Animal emanations
      Vegetable
   (b) Intestinal tract
      Foods:
   (c) Foci of infection
   (d) Subcutaneous tissue of intravenous injection
   (e) Therapeutic serums
2. Nonanaphylactic
   Thymus enlargement
   Tuberculosis
   Renal
   Cardiac
   Bronchial infection, acute or chronic
   Reflex bronchial spasm

Classification of Rackeman

(a) Pollen hay fever
   Pollen asthma
   Complicated pollen asthma
(b) Dust, horse, feathers, etc.
   Dust asthma
   Complicated dust asthma
(c) Food poisoning, urticaria, eczema
   Food asthma
   Complicated food asthma
(d) Bronchitis
(e) Reflex
   Perennial asthma (bronchial infection without organic change)
   Emphysema
   Pulmonary insufficiency
   Chronic bronchitis

Classification of Piness

Asthma throughout the year, due to animal, food, bacteria, dust; seasonal asthma, due to pollens.

Asthma throughout the year, due to bacteria, endocrines; seasonal asthma, due to bacteria.

The classification of Walker is the simpler of those mentioned and quite satisfactory for practical purposes. But the writer would like to add to this classification to the nonsensitive group the endocrine type and dusts to the sensitive perennial type.

Cooke's classification is quite similar, only somewhat differently arranged and superfluous, as most writers are agreed that true bronchial asthma bears no relationship to the dyspneas of cardiac and renal diseases.

Rackeman's classification covers the subject very thoroly and gives one an idea of what happens to the sensitive individual, from the onset of his allergy to its termination.

Diagnosis. (a) First a careful history is obtained, particular attention being given to family history, as it is not an infrequent thing for one or more members of the same family to have allergic conditions. In a recent study made by the writer 27.4 per cent of cases gave such a history. Cooke[4] reports in his series of cases studied that 48 per cent gave such a history.

Even tho all ages are liable, still one will oftentimes from the history of age of onset obtain a clue as to the group of proteins the individual is likely to be sensitive to. The writer's experience is that, as the age of onset increases, so does the frequency of sensitivity decrease.

The time and season when the attacks are most frequent are factors to be determined in considering the etiology. Cases occurring seasonally, particularly the summer type, are usually sensitive to pollens, altho it is not infrequent to find such cases sensitive to certain seasonal foods. One will also encounter a group of cases nonsensitive to proteins and cultural studies, which from nasal or bronchial secretions will oftentimes give pure cultures of staph. albus.

Occupation is a factor, since the etiology can oftimes be traced to this source, for example, hostlers sensitive to horse dander, bakers sensitive to wheat, etc., the sensitization having been acquired thru the continuous handling of the proteins in the individual daily labors.

A history of certain skin conditions, namely eczema, urticaria and angioneurotic edema is important, in that they are allergic conditions, and that they bear a definite relationship to bronchial asthma, in that most cases with a history of any one of the above mentioned conditions in early life generally becomes asthmatic later in life. The writer, in a study of 400 asthmatic children, has been able to obtain such a history in about 41 per cent of cases, the most frequent condition being eczema, which usually occurs about the face, behind the ears and the bends of the elbows (the flexor surface), the eczema usually occurring about the time the child is weaned and in a number of cases while the infant is being fed breast milk. Shannon[5] pointed out that human milk could and did act as a sensitizing agent, he having traced the anaphylactic substance (egg protein) from the mother to the infant.

(b) A careful physical examination is made to rule out that group of conditions which so closely resemble bronchial asthma, namely, cardiorenal disease, acute and chronic bronchitis, fibroid tuberculosis. In the latter the dyspnea is purely mechanical, while in the former it is of the inspiratory type.

A careful investigation follows by a competent laryngologist of the tonsils and accessory sinuses, also radiographic studies of the teeth for foci of infection, so that they may be eliminated.

(c) Laboratory studies of the sputum, nasal and other secretions are routinely made to determine the infecting organism, if any be present. Other laboratory studies, such as blood and urine, are made routinely.

(d) Basal metabolic studies are made when indicated, and lastly cutaneous skin tests are made with the proteins of foods, pollens, animal emanations, bacteria, dusts, etc.

Since it is now a well established and accepted fact that the chief etiologic factor in the causation of bronchial asthma and its allied allergic conditions is hypersensitiveness, one is justified in performing the protein skin test, as they oftentimes, in fact, in the greater percentage of cases, demonstrate the etiology producing the symptoms.

The reaction that occurs when the application of proteins is made (regardless of the method employed) to the skin of the individual sensitive to a particular protein is a weal with irregular edges, or pseudopodia, surrounded by an area of erythema. The two methods most frequently employed are the scratch or cutaneous method and the intradermal or intracutaneous method. The writer, after having observed and employed both methods, has concluded that the scratch method gives the most satisfactory results in his hands, altho the intradermal method has proven equally successful in the hands of other workers, such as Cooke, Vandeveer, Brown and others.

The reasons for employing the cutaneous method are quite similar to those quoted by other writers, namely, (a) more tests can be made with less time and trouble at the same sitting; (b) it is less painful and the possibilities of constitutional reaction are practically nil; (c) there is no necessity of sterilization of solutions and the danger of infection is minimized; (d) occurrence of pseudoreactions are rare by this method. Schloss[6] concludes that the intracutaneous test is more sensitive but misleading, due to its tendency of pseudoreactions.

Brown[7] claims the superiority of the intracutaneous method over the cutaneous method on the following grounds: (1) Every case known to be clinically sensitive to a protein gave a reaction; (2) the cutaneous method gives reactions in only 50 per cent of cases when powdered proteins are used, while fluid preparations given by the intracutaneous method gave reaction in over 80 per cent of cases; (3) he claims that it is less painful and less disfiguring; (4 requires less time than the cutaneous method; (5) same preparations can be used for testing as well as for treatment; (6) and that one is equally as liable to constitutional reactions by the cutaneous as with the intracutaneous method.

The writer cannot agree with the latter statement, as in a study of over 2000 allergic patients, approximating about 400,000 tests, with the cutaneous method, he has never encountered a constitutional reaction, while with the intracutaneous method he has both experienced such reactions in his own hands and seen them in the hands of others.

The technic of the two mentioned methods of testing are as follows:

(1) Scratch or cutaneous method. A small number of cuts, each about one-eighth of an inch in length, about one-half inch apart, are made on the flexor surface of the forearm. These cuts are made with a sharp scalpel, but not deep enough to draw blood, altho the skin must be broken. On each cut is placed a small amount of protein and to it added a drop of n|10 sodium hydroxide to dissolve the protein and to permit of its rapid absorption. At the end of a half hour the arm is washed off and reactions are noted, always comparing the inoculated cuts with the control, upon which no proteins were placed. The uppermost cuts are usually employed as the controls.

A positive reaction consists of a raised, white, irregular, elevated or urticarial wheal surrounding the cut. A reaction to be positive must be at least 0.5 cm. in diameter. A negative reaction should rule out those proteins as causing the asthma or allied allergy, while all those giving a positive reaction should be suspected as being the cause of the allergic condition being studied.

(2) The technic of the intradermal method is as follows: Sterile fluid preparation of the proteins are used, a tuberculin syringe graduated in hundreths of a c. c., with a 26 gauge needle being employed. About 0.01 c.c. is drawn into the syringe and injected into the skin on the outer aspect of the upper arm, forming an elevation of about 2 to 3 mm. in diameter. The results are noted in from 5 to 10 minutes and the reaction determined by the formation of a wheal, an area of erythema surrounding it. To be positive, the wheal must be at least 0.5 cm. in diameter.

In performing skin tests it is well to bear in mind the facts as follows: (1) It is unwise to test patients immediately following or during attacks, as they will rarely respond to the tests, even tho they are known to be sensitive, due to the passive immunity established by the attack. (2) Occasionally reactions occur with proteins with which the patient has never come in contact. This is a natural sensitiveness, and a warning to avoid contact with these proteins. (3) Reaction may be delayed. A test that appears negative after a half hour may become positive within twenty-four hours, this usually occurring in patients tested soon after an attack. (4) There is a group of cases that give a definite anaphylactic history, but do not react to skin tests. This may be due to one of three reasons: (a) Possibly having omitted the proteins to which the patient is sensitive; (b) possibility of a toxin and not a protein being the cause; (c) possibility of having tested the patient during a period when he or she is recovering from an attack with the system loaded with antibodies, thus giving a negative test.

Cooke[8] has formulated two postulates which must be fulfilled before one can assume that any substance is etiologically important in a case of hypersensitiveness. They are as follows: (1) Hypersensitiveness must be demonstrated either by (a) a positive local reaction, cutaneous or ophthalmic, or (b) the original allergic manifestation must be artificially produced at will, on intrduction of the substance either by inhalation, ingestion or subcutaneous injection. (2) It must be shown that the individual comes in contact, in some way, with the suspected substances in order to permit it to act as an etiologic factor.

Patients may give clinical evidence of sensitization and give negative skin reaction, and positive reactions occur without clinical symptoms. The former may be explained by the fact that one having just recovered from an attack of asthma or other allergic condition has acquired a passive immunity. This also occurs at times after a patient has remained away from the protein, to which he or she is sensitive over a long period of time.

Multiple sensitization is not infrequent, in fact, it is quite common, particularly in those sensitive to pollens. It is the writer's experience that the earlier the onset of the allergy the more liable is the individual to multiple sensitization. A number of individuals studied gave reactions to all groups of proteins. This type of sensitization is usually found in adults, altho it is possible for younger individuals to be multiple sensitive. The writer's experience is that the earlier one finds and eliminates the protein or proteins to which one is sensitive, the less liable is the individual to multiple sensitization.

Brown[9] believes that undue reactions caused by proteins of food may take place in any tissue or organ in the body and the symptoms produced do not depend upon the variety of proteins but upon the tissues in which the manifestation takes place. Duke[10] mentions six cases of abdominal pain, apparently the result of food allergy.

The proteins used for testing by the writer are prepared by the method of Coca[11] (Cornell method), they having proven more satisfactory than those obtained from various chemical firms which were used by the writer up to eighteen months ago. The proteins prepared by the method of Coca are more potent than those purchased from commercial chemical firms. They are in liquid form, making them easy to handle. Their potency is determined by the Kjeldahl method, after which they are diluted to the various strengths that are applicable for either testing or treatment. The usual strength of the testing solution is 0.5 mg. per c. c.

The pollens are collected by the method originated by Hampton[12], as follows: The flowering stalks of the grass to be collected are cut with a razor half way between the lowest flower on the stalk and the base of the plant. They are to be placed immediately in a bucket of tap water and carried preferably to a greenhouse, where the light and temperature are comparatively free from air currents. Here they are transferred to quart fruit jars, which should be placed on a clear piece of plate glass. About one dozen jars should be used, and these are to be filled with a nutrient solution, containing the chemical elements hydrogen, oxygen, nitrogen, sulphur, phosphorus, iron, magnesia, calcium, potassium, as found in the following salts: potassium hydrogen phosphate 8.574 g., calcium nitrate 2.986 g., magnesium sulphate 6.32 g., ferric phosphate .001 g. to each liter. Change the solution twice during the two weeks needed.

Each day the flowers should be quietly shaken and the pollen swept up with a camel's hair brush, and sifted thru bolting cloth. It is necessary to let the pollen dry for a couple of days to avoid spoiling, which happens if put in glass stoppered bottles too early.

In this way the large quantities of pollen can be collected with little effort or expense. This method is applicable to grasses or other shrubs, which do not produce pollen in large quantities.

The pollen antigen may be prepared by one of two methods, the method of Walker[13] or the glycerol[14] and salt solution. Both are herewith described. According to the method outlined by Walker, to .5 gm. of the dry pollen is added 44 c.c. of sterile normal saline and the mixture is shaken thoroly at frequent intervals for twenty-four hours, after which enough absolute alcohol (6 c.c.) is added to the mixture to make the alcohol content 12 per cent. Again the mixture is thoroly shaken at frequent intervals for twenty-four hours, after which the mixture is centrifugalized at high speed and the supernatant fluid pipetted off and saved. This supernatant fluid, therefore, consists of the pollen protein dissolved in 12 per cent alcoholic normal saline solution, and it represents by weight 1 part pollen to 100 parts solvent. This 1 to 100 solution is used as stock and from it other dilutions. 1- 500, 1- 1,000, 1- 5,000 and 1- 10,000, are made. These solutions are used for skin tests and for treatment, and with the addition of a small crystal of thymol they keep for many months in a cool place.

The glycerol and salt solution method of preparing pollen antigen is as follows: Grinding the dried pollen with glass dust in a mortar for two and one-half hours, using a diluant composed of 67 per cent glycerine and 33 per cent saturated sodium chloride solutions to moisten the pollen. Then sufficient of the glycerine chloride solution is added, so that the total volume is such that 0.1 c.c. is equivalent to approximately 14,000 pollen units, the pollen unit having been arbitrarily chosen as the equivalent of 0.001 mg. of pollen. This mixture is shaken for thirty minutes and then kept at 37 degrees C. for sixteen hours. It is then shaken for one hour, centrifugalized and passed thru Berkefeld filters. From this standard solution, which is eyual to the 1- 100 solution as described in the method of Walker, the dilutions are prepared for testing and treatment.

When testing it is advisable to test with the groups of various proteins, for example, pollen group, food group (which is further divided into the various types of food, such as cereals, meats, vegetables, nuts, fish, etc.), epidermal group (consisting of the various animal hairs and feathers), bacterial group and the miscellaneous group (consisting of dusts, sachet, face powders and drugs).

The number of tests performed depend upon the history, but the writer thinks it advisable to use every available protein at hand, so as to avoid missing any to which one might be sensitive. At present there are available approximately 157 food proteins, 128 pollens, 10 animal hairs, 15 bacterial and the miscellaneous proteins obtained from the various sachet, face powders and drugs.

Treatment. It is not the intention of the writer at this time to discuss treatment of bronchial asthma during the acute attack, as this is so well known and standardized that it appears useless to dwell on this part of the subject. But I will take up for your consideration specific treatment by means of desensitization with and elimination of the specific protein known to cause bronchial asthma, it being an accepted and well established procedure, yielding very satisfactory results in the majority of cases. In discussing specific treatment, the writer will discuss the various groups and their treatment as follows: Food group, pollen group, epidermal group, bacterial group, miscellaneous group, (dusts, sachets and endocrines).

Foods. It is the writer's practice with patients of this type to insist on a total and absolute abstinence from the foods to which they are sensitive, the period of abstinence being from a few years to permanency. The patient is advised to report back at least once in six months, at which time he is retested with the foods to which he is sensitive, and with any other proteins with which he has not been tested in the past. This is done for a two-fold purpose. It permits one to keep the patient under constant observation, and it is possible to determine whether or not the patient is acquiring an immunity by abstinence from the foods.

Some workers prefer artificial immunization with the foods to which the patient is sensitive. This method consists of giving gradually ascending doses of protein, either by mouth or subcutaneously, over a long period of time or until the patient is enabled to take large amounts of the protein to which he is sensitive. Some writers, such as Talbert[15] and Schloss[16], have reported some very brilliant results. Brown[17] has devised a system of limiting the diet of the affected individual to one or a few articles of food for a short time, after which other foods are added, one at a time, until a liberal diet is reached. No food suspicious of causing trouble is included in the diet oftener than twice a week, and he suggests that it be carried on in conjunction with skin tests. He insists that no food be given until the reactions are negative. The slightest reaction precludes that substance from the diet.

The writer, after having observed the above methods in the various clinics and in his own practice, has concluded that the results are far more satisfactory in those cases, in which there is a total abstinence from the foods to which the patient is known to be sensitive, than in that group which were treated by artificial immunization. The objections to the latter method are: (1) That it is most difficult if not impossible to determine an accurate dosage of the protein to be given. This is particularly true when the individual is sensitive to more than one food protein. (2) It is impossible to depend upon the tissues to absorb the protein when given subcutaneously or orally. (3) Anaphylactic reactions (either local or constitutional) may occur, if the dose be larger than that which the patient can tolerate. (4) The results obtained do not warrant the time spent in attempting desensitization, since oftentimes it is unsuccessful. (5) Abstinence from the protein to which the individual is sensitive from his dietary is a simple procedure, and works no hardship on the individual.

In conclusion, the writer will give an analysis of a typical case belonging to this particular group.

I. Z., a boy, aged 3 years, history of eczema since age of ten months, at which time he was weaned. The eczema was first noticed behind the ears, then on the cheeks, later in the bends of both elbows (flexor surfaces). At the age of eighteen months had first attack of asthma, with recurrence of attacks every two weeks. During the periods when he is free of asthma the eczema recurs and vice versa.

He was tested by the cutaneous method to the various proteins, and gave reaction to the following: egg whole, egg yolk, egg white, lima bean, string bean and navy beans. The mother was instructed to eliminate egg from the diet, to avoid egg in the foods cooked and combinations of food containing egg, also to abstain from the other food proteins to which he reacted. After two weeks of abstince from the proteins mentioned, the asthma disappeared, the eczema cleared up and the child has been free from both ever since. The mother reports at six months intervals, at which time the child is retested.

This case illustrates the type originally sensitive to foods and by the elimination of the proteins to which he was sensitive the asthma and eczema disappears. Thru this elimination a prophylaxis is instituted against secondary bronchial infection.

Pollen Type. This type responds to skin sensitization and is the simplest of all types to treat, in that they usually respond to treatment, providing one commences treatment early enough and a sufficient amount is given. The pollen asthmatic is usually seasonal, altho there are some who have perennial asthma, which is particularly true in California, due to various flora which pollenize practically thruout the year, amongst them being Bermuda grass, (gynoda dactylon), and hay grass (colium perane). This type East of the Rockies is usually due to the artemisias and a few grasses, and, as a result of so few pollens being active, it becomes a very simple matter to determine the etiology. However, in the West the problem is a more serious one, in that there is such a great variety and number of flora.

Therefore, it becomes essential that one must know their regional distribution and their season of pollenization. In Southern California the earliest seasonal asthma is due to tree pollen, such as the live oak, black walnut and scrub oak. They are soon followed by the grasses, such as canary, blue, broom grasses, wild oats, etc., their season of pollenization ending about July 15. Then the summer pollens become active, the chief offenders in this group being the artemisias, such as Western ragweed, false ragweed mugwort, then the amaranthus metrofelexus, cocklebur, Russian thistle, and the last to pollenize being the sagebrush, chief of which is the artemisia trientata.

Watson and Kibler[18] investigated the eiology of hay fever and asthma in Arizona. They found the artemisias of little importance but the amaranthas the chief factors in the production of seasonal asthma in that region.

This is best treated by artificial immunization with the proteins to which they are sensitive, and preferably preseasonal, thus producing an immunity to the offending protein of the pollen by the time active pollenization of the plant occurs. Treatment by this method should commence at least fourteen weeks prior to the onset of the expected season, as the results obtained in the cases treated seasonally are not very satisfactory, due to the fact that it is impossible to determine an accurate dosage on account of the patient absorbing the pollens to which he is exposed, plus the amount administered subcutaneously. Walker[13] states there are two chances of erring in the cases treated during the season, the liability of not giving enough pollen antigen to do any good, and the other, by far the more dangerous liability, of giving too large a dose. Not so much that the injected dose is too large as that the amount injected, together with the unknown amount which the patient is liable to encounter in the atmosphere, may be too large, thus causing severe constitutional reaction.

After determining the pollens to which the patient is sensitive, the various dilutions are prepared. They are from 1- 100 to 1 10,000. The patient is then tested to the various dilutions and treatment is commenced with the dilution next higher than the one which gives the least positive skin reaction. In other words, the initial dose consists of 0.1 c.c. of the strongest dilution which failed to give reaction, no matter how slight it may be. Treatments are given subcutaneously at weekly intevrals, never oftener than every five days. Each week the amount of antigen is gradually increased and, as treatment progresses, the strength of the dilution is increased, until 1-100 dilution is given. Below is an outline of the dosage for the treatment of this type:

1— 10,000	0.1 c. c., 0.2 c. c.
1— 5,000	0.2 c. c., 0.3 c. c., 0.4 c. c.
1— 1,000	0.2 c. c., 0.3 c. c.
1— 500	0.2 c. c., 0.3 c. c., 0.4 c.c.
1— 100	0.1 c. c., 0.2 c. c., 0.3 c. c., 0.4 c. c.

The above is the method employed by Walker, and proven very satisfactory in the hands of the writer and others. The writer's general rule during the treatment period relative to increasing the dosage is that, should any of the following reactions occur, such as marked redness at the site of injection, hay fever or asthma immediately following or within twenty-four hours of the time of treatment, then instead of increasing the dosage at the next treatment, the dose of the previous treatment is repeated. Any or all of the mentioned reactions are very easily controlled by the use of epinephrin chloride given subcutaneously in 5 to 15 minims doses, repeated as often as necessary.

The writer wishes to now analyze a case characteristic of pollen asthma.

Mrs. R. P., aged 55, whose father had seasonal bronchial asthma, whose past personal history is of no importance, has had hay fever and asthma since childhood, attacks usually commencing late summer months, onset with hay fever, which is followed by paroxysms lasting from July to December.

Cutaneous tests gave the following reactions: False ragweed, Western ragweed, cockleburr. She was treated with a pollen antigen prepared from the above mentioned pollens. Treatment commenced on or about April 15 each year and discontinued on or about Sept. 15.

The first year the patient reported about 75 per cent of relief, the second year obtained complete relief. In fact, this is the first year as long as the patient can remember that she has been entirely free from asthma. Treatment was commenced with 0.1 c. c. of the 1— 10,000 dilution and terminated by treatment with 0.5 c. c. of 1— 100 dilution.

Epidermal Group. This group includes the animal hairs, danders, feathers and furs of various animals. Patients who are sensitive to feathers, such as goose, chicken and duck, are advised to avoid actual contact with them. This can be done by sleeping on hair or cotton floss pillows. But, if the sensitization is the result of occupation, such as chicken ranchers, chicken killers and upholsterers, then it is advisable to immunize with the specific protein, as it is almost impossible to avoid contact. The above holds good for cases sensitive to cattle hair, dog hair, cat hair and other fur danders, but this rule does not hold good in individuals sensitive to horse dander, as its distribution is so widespread, being found on streets, in fertilizer on lawns, furniture, mattresses and even in clothes.

The results in this particular group are unusually good. Very few, if treated properly and consistently, fail to obtain relief, either entirely free over a long period of time (from 1 to 5 years, or more), or partial relief. The method of desensitization is similar to that employed in the pollen type, with the exception that those sensitive to the epidermals are very much more sensitive, some reaching to dilutions as high as 1- 100,000.

The benefits of desensitization can be checked up by the skin tests. It will be noticed that as treatment progresses there will be a marked reduction in the positiveness of skin reaction. One must not treat this type too often. The interval between treatments must be at least five days, preferably at weekly intervals, as very marked and serious reactions may result, such as were mentioned in the discussion of pollen asthma.

The following case is reported typical of this type:

L. B., aged 9, male. Mother had hay fever. Past personal history of no importance, present illness dating back to age of three years, when he had a definite attack of bronchial asthma and which he has been subject to ever since. Severity of attacks vary in that some days there is only wheeze, and others there are paroxysms. However, he is never free.

This boy's father is a rancher and has at this time fifty head of horses as well as other animals about the ranch. He sleeps with his father, who is in contact with the horses at all times.

This boy was tested to all the proteins on hand, numbering some 300 in all, and found sensitive to horse dander and horse serum. He was tested to the various dilutions of horse dander and was sensitive to a dilution as high as 1—200,000, with which treatment was commenced. This particular case did not give a favorable result, due to the fact that there was no cooperation on the part of the parents and the doctor.

Bacterial Type. Rackeman[19] believes that asthma due to bacteria depends on a condition of specific cellular sensitiveness, either to the bacteria themselves or to the products of their action in the body. The writer personally questions the specific value of vaccine in allergy and has only been able to obtain reactions with bacterial proteins in about sixteen cases from a group of 200 studies. And, therefore, has concluded that this type is not a true allergic asthma but better described as an asthmatic bronchitis, as suggested by Walker.[20]

In the individual sensitive to bacterial proteins and those having a secondary bacterial infection, the latter type—commonly called "chronic bronchitis," and better called asthmatic bronchitis—are best treated with bacterial vaccine. In the former, one should treat with a stock vaccine, containing the organisms to which the patient was found sensitive and, better still, if the organism can be isolated from the sputum or nasal secretion, an autogenous vaccine prepared and the patient treated with the same. The writer's method of preparing autogenous vaccine is smilar to that employed by Walker, using the whole killed bacteria, the object being to desensitize the individual as well as immunizing him at the same time, thus protecting him from secondary infection.

In cases nonsensitive to bacterial proteins an autogenous vaccine is prepared from the nasal or bronchial secretions in the following manner: A loop of the nasal secretion or sputum is placed in a tube of dextro bouillon and allowed to grow in the incubator for thirty-six hours, after which time it is centrifuged, the supernatant fluid decanted and washed with normal saline solution thru three washings. It is then diluted, so that each c.c. contains 2000 million bacteria. The vaccine is then inactivated for one hour at 60 degrees C., and to it is added 5 minims of phenol which acts as a preservative. In preparing this type of vaccine no attempt is made to isolate the predominating organism; all of the bacteria contained in the bouillon culture are utilized. But cultural studies on various media, particularly blood agar, are made for the identification of the organisms in this particular specimen.

Technic for the treatment is as follows: Initial dose consists of 200,000 bacteria, or 0.1 c.c., increasing a similar amount each week until 1. c.c. is reached, at which time treatment is discontinued. And, should any local or constitutional reaction occur, it is advisable to repeat the dose insead of increasing at the next treatment.

A case report typical of this type:

Mr. J. R., aged 29, married. Family history is negative to allergic conditions, as is the patient's.

His present illness dates back two years, at that time living in New York. Had influenza which was followed in two months by a feeling of oppression in the chest, some wheezing with a productive cough, no temperature. Then had an attack of dyspnea, with marked wheezing, followed by a productive cough, followed by a period of freedom from symptoms for three months, since which time he has persistently wheezed, has productive cough and attacks of dyspnea, particularly nocturnal.

Physical examination in this patient is negative, excepting for chronic bronchitis and moderate emphysema.. Laboratory examinations are negative. Cultural examination of sputum gave pure culture of strept, viridans and diphtheroid. An autogenous vaccine was prepared from the sputum and treatment given with the same. The initial dose consisted of 0.1 c. c., and an increase of 0.1 c.c. each week until 1 c.c. was given, at which time treatment was discontinued.

It is interesting to note in this particular case that after the fourth treatment the patient was free from asthma, and has been free ever since. This is now a period of a year. The writer feels that in this case it will probably be necessary to give another course of the vaccines in the future.

Miscellaneous Group. Face powders, sachets, tooth paste or powder hypersensitiveness is best treated by avoidance of the powder or paste. If the powder be one containing orris root, and the patient is not sensitive to rice powder or vice versa, then powders that do not contain the offending protein may be given. This type of individual gives very satisfactory results and obtains almost immediate relief by abstinence from the powder.

Drugs such as quinine and aspirin are the ones most frequently met with that give allergic reactions. They have been reported to cause asthma. The treatment of this type is simple avoidance of the drug in question.

Dusts. Room dusts obtained by sweeping or by the vacuum cleaner from the rooms or their contents occupied by patients are extracted by the method of Coca, and the individual tested with the proteins obtained. It has been shown by Cooke that about 4 per cent of the asthmatics studied by him were sensitive to dusts with which they came in direct contact. The treatment indicated here is either desensitization with the specific dust protein or change of environment.

CONCLUSIONS

1. Anaphylaxis is an induced and experimental hypersensitiveness in animals, rare in humans, while allergy is a natural inherited hypersensitiveness affecting only human beings.

2. The hypersensitive state may be present at birth, inherited or conveyed by the mother to the child.

3. A history of allergy conditions, such as hay fever, eczema, urticaria, bear a definite relationship to the protein sensitive asthmatic.

4. It is of paramount importance to make a careful study of the patient's personal history and environment.

5. Laboratory studies of sputum, nasal secretions and blood, as well as metabolic studies, are aids in the diagnosis and treatment of bronchial asthma.

6. It is now a well established fact that the cutaneous method of testing is the best and the safest method of determining the etiology of bronchial asthma.

7. Multiple sensitization is common. Sensitization to one protein in early life is apt to be followed by multiple sensitization in later life and vice versa.

8. It is rare for persons to react to the cutaneous tests with protein who give a history of onset after the age of 40.

9. A complete collection of proteins of all groups is necessary. This is particularly true for pollens which should come from the region where the patient lives, as commercial pollens of the East are of no value to the pollen asthmatic of the West.

10. Bronchial asthma is no longer an incurable condition, since by scientific study and the cooperation on the part of the patient, with persistency on the part of the physician, the greater percentage of sufferers can be partially or permanently relieved.

11. The preparation of protein, as suggested by Coca, gives more satisfactory results than those purchased from commercial chemical firms.

12. Complete abstinence from the foods to which one is sensitive is a much simpler and easier method of treating the food sensitive asthmatic than by artificial immunization.

13. Cultural studies of nasal, bronchial and other secretions are necessary to properly treat the bacterial type.

14. The pollen type is best treated by preseasonal treatments, but may be treated seasonally, at least fourteen weeks prior to the expected onset.

15. Of the epidermal type those sensitive to horse dander should always be desensitized, while those sensitive to the other epidermal proteins, such as cat, dog, rabbit, are best treated by avoiding contact with the animals or fur to which they are sensitive.

16. The bacterial type, particularly the asthmatic bronchitis, is the most difficult to treat and gives the poorest results. They are best treated by autogenous vaccine.

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THE TREATMENT OF PNEUMONIA*

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Literally the fortuntes of war have within the past five years given the author a most unusual opportunity to see and to test out the various treatments of pneumonia. Not only has he been able to follow most intimately in the wards and at the bedside the clinical course of many hundred cases of pneumonia, but it was also his fortune to see, as it were, many instances of pneumonia in the making, thru the unusual opportunity afforded by the war to study the epidemiology of the disease.

Another great opportunity concerning this disease was further afforded by the study at the autopsy table of many cases which had been under observation in the wards, and which had been subjected to the various forms of treatment, and finally to study and analyze the protocols of all the cases dying of this disease in the American Expeditionary Forces in France—between five and six thousand in number.

Such an experience cannot but have left certain indelible facts impressed upon the mind of an observer schooled in internal medicine, and, while I confess that it has created in me more of a sense of humility than otherwise, of caution rather than of certainty in the way of therapeutic measures, it has also given me a basis of experience, on which I have since been able to study this most serious epidemic disease with far more than former satisfaction.

As a result of our war experience we have as a matter of general concensus of opinion greatly widened our concept of pneumonia. Very few of us now consider it as a specific disease, that is, as a local manifestation of a general infection, for we now know that it is more a local than a general disease. We know that it may be caused by a very considerable group of organisms and that even any one specific organism may at one time cause a lobar process and in another instance a form corresponding to our anatomic concept of a bronchopneumonia. The influenza bacillus may, for example, cause in one instance a type of pneumonia corresponding both clinically and pathologically precisely with a lobar penumonia, and in another such a type as would be classed either on a clinical or a pathologic basis as a bronchopneumonia. Many cases of pneumonia are obviously also due to mixed, not pure infections.

Time does not permit of an analysis of the data which have caused us to arrive at this conclusion, but the point which I wish to make here is that this is apparently a now well accepted fact among clinicians and pathologists, if not among the ultrabacteriologists, that we cannot look for a specific treatment of pneumonia, insofar as a basis of treatment is to be founded on the precise specificity of the disease.

Another very important fact which the observation of this very large material has brought me is that, insofar as treatment is concerned, it boots little which anatomic type of the disease we may be treating, insofar as the results or type of our treatment is concerned. I must, however,

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promptly explain here, lest I be misunderstood, that which I verily believe, that, while this statement holds insofar as anatomic forms are concerned, I am equally and perfectly certain that the treatment may be required to be very definitely modified and adjusted in accordance with the organism or organisms which are apparently chiefly concerned eitologically in any given case. For example, it matters little therapeutically what you do specifically in the way of treatment in a case of bronchopneumonia, or a case of labor pneumonia, but, if the case be caused by a type I. pneumococcus, whether the anatomic form be bronchial or lobar, the specific type I pneumococcus serum may be employed to definite advantage. And I also believe that, whatever the type of anatomic lesion produced be, a case of pneumonia caused by the influenza bacillus demands in certain respects a different therapeutic handling than one caused by the pneumococcus.

For the purpose of more definite discussion, we may divide our types of pneumonia treatment into specific, prophylactic, mechanical, drug and symtomatic. Not that I believe that it is possible in any given case to sharply separate these various measures, but merely that such a classification will admit of a clearer ground for presentation and discussion. Before taking up these various headings, however, I wish to primarily state that I believe that in every instance the successful treatment of pneumonia must be *individual*. The more individual your efforts the better results, and I am fully convinced that there is no single disease in which specifically directed individualism counts for more in successful treatment than in this disease. The physician who attempts to treat a great, virgorous, lusty man with a pneumonia in precisely the same way as a case occurring as a complication in an exhaustive disease, or that in a malnourished and derpressed patient, will meet with even a higher percentage of failures than is the misfortune of most of us. In pneumonia, more even than in most other diseases, we must treat the patient far more than the disease.

The Prophylactic Treatment. As a class we pay altogether too little attention now-a-days to the prophylaxis of pneumonia. In some respects, as I glance thru the older text-books on medicine, I feel that our progenitors in medicine had a more clear grasp of certain of the factors which cause the development of pneumonia than we generally confess. Only such studies as were possible during the war brought these factors clearly before my mind, yet they appear to me to be of the most elemental importance in our study of the disease. A mere glance at the pneumonia occurrence of any of your great cities will convince you that, while pneumonia is always present, it occurs for the most part in waves or epidemics.

Henry Vaughan, who served with me at Camp Upton during the winter of 1917, found, for example, a very close similarity between my curves of pneumonia admission and of his barometric variations. A series of bad and stormy weather was invariably coincident with an increased occurrence of pneumonia. In France we found that other factors being similar, those Divisions giving us the highest percentage of pneumonia were those which had been exhausted by prolonged fighting, by insufficient clothing, and notably those who were poorly supplied with suitable shoes or by insufficient blankets in which to sleep, or which had suffered from gassing.

If you will take the time to go intimately into the prepneumonic history of your patients in private life, you will also find very similar conditions present in large degree. Chilling of the body, insufficient or improper feeding, insufficient rest, and the like. Another and very important factor is shown in the problem of crowding. Other things being equal, it is the patient in compact communities who suffers most from pneumonia. A railroad trip, no matter how comfortably made, was found to always bring out an epidemic of pneumonia among soldiers, and in troops in barracks the disease was always more prevalent than among those in the field, especially if living in tents, in contradistinction to those living in billets or barracks. Of course a certain amount of these infections were but examples of infection transmission and, whenever troops from two different localities were intermingled, an outbreak of pneumonia would appear, especially, of course, if the disease was already epidermic in one of the groups.

Very much can certainly be done in the way of prophylactic treatment of pneumonia by an understanding and application of these factors, both in civil and in industrial as well as in military practice, and I am convinced that we do not as a rule sufficiently appreciate and apply this knowledge.

We are all very much interested now in the possibility of vaccination against pneumonia. Is it worth while? Have we sufficient grounds of success on which to base further studies? I have been very much interested in these experiments, and it has been my good fortune to have seen a good deal of ths work carried out. Since our time is so limited, may I not, then, give you my conclusions in this respect rather than the experiments and arguments on which they are based. Briefly, I believe that vaccination against catarrhal colds and against epidemic types of "influenza" are to a considerable degree successful both in group and in individual practice.

Insofar as direct inoculation against pneumonia is concerned, however, I have not seen sufficient success to encourage me as to future experiments along these line. Cecil vaccinated some 15,000 members of the 77th Division against pneumonia, but insofar as we were able to observe these men subsequently proved quite as susceptible to the infection as those who had not been so treated. The follow-up of these men was, however, very poorly carried out for just at that time the 77the Division was more interested in the casualty lists of the Boche than in our pneumonia studies.

It is quite certain that, with our newer knowledge of the large group of organisms concerned in the production of pneumonia, if we are to obtain any definite results along these lines of experiment, we must include in our consideration a very large group of organisms rather than the pneumococcus only.

The Specific Treatment. I do not feel in the present state of our knowledge that we are justified in too extensive a consideration of this phase of our subject. Very briefly, I am entirely enthusiastic over the results to be obtained from the proper use of type I pneumococcus serum in type I pneumococcus cases. The treatment is applicable, however, in no other form or type of pneumonia and is quite capable of doing harm, if used inadvisedly. Even in type I cases I strongly urge against its employment, unless it can be introdoced within the first 36 to 42 hours of the disease. This demands a very early typing of the sputum and, of course, greatly limits the employment of the serum. It is, however, quite capable of causing very serious disease manifestations in itself, and I am quite certain that it should be used in only type I cases and only when it can be employed early.

I have tried out and seen tried out many other forms of serum treatment. I have seen no results which have caused me to desire to repeat the experiment as yet, for we can certainly thus far call it no better than an experiment. Vaccine treatment has been an entire failure in my hands, nor have I seen sufficiently satisfactory results in the hands of my colleagues to convince me as to its utility.

Undoubtedly the most extensive experiments along the line of the specific treatment has recently been reported by Russel Cecil and his colleagues. I have followed this work closely thru Dr. Cecil, with whom I have been personally and professionally closely associated for some time, and I have sufficient faith in his optimism so that I propose trying out his methods myself during my coming service. His work has been most carefully controlled, so as to avoid the usual variation in virulence which commonly so confuses all work of this character, and he seems to be giving us a decidedly better recovery percentage than in the similar and only symtomatically treated cases.

Thus far we can only say that Cecil's method is an experiment worthy of optimistic trial. It is not entirely without danger; it causes in most cases a marked elevation of the temperature, considerable shock, and it is clearly not to be considered as an inert substance. Cecil, Connor and others are all, however, far from certain that they are dealing with a specific substance, altho this has been the attempt and it seems quite possible that they have really but another form of foreign protied material which, as in many other disease conditions, causes certain hemic changes which may be of benefit in pneumonia, perhaps in other disease conditions also. Time will soon tell us.

Similar results are claimed in the specific treatment of pneumonia from the use of chicken serum, or auto serum, of various vaccines; and such also may be the results which Solis Cohen achieves in his use of quinine in the treatment of pneumonia. Certainly Cohen by his method is able to raise the leucocyte count of the blood and in all probability at the same time he may increase the hemic and lymphatic resistance against the infecting organisms. Thus far, however, I feel that we must confess that the specific treatment of pneumonia has been an unqualified success only in type I cases from the use of type I pneumococcus serum.

Drug Treatment. The employment of drugs as specifics in the treatment of pneumonia undoubtedly has its best illustration in the quinnine treatment of Solis Cohen. Scarcely a year passes, however, but that some new drug is advanced by some honest enthusiast. Now it is the salicylates, then the iodides. Just at present we are told that sodium bicarbonate is the sovereign remedy, based on the conclusion that the chief or one of the chief lethal factors in the disease is an "acidosis," just whatever is meant by this vague term.

When I was a medical student oxygen inhalations were to cure our cases of pneumonia and the blue can came in with the diagnosis. It disappeared after a year or so, except where it was used for its symptomatic indications, but it is again being returned, now, happily, painted another color, and for a supposed specific action in the disease. That it does in a very limited number of cases meet a symptomatic need must be admitted, but that it has any further action is not to be supposed, either from its clnical effects or from the exceedingly meagre theory on which its use is founded. After all, the final arbiter and judge is the clinician and not the laboratory investigator.

Digitalis has been hailed a specific in pneumonia. I will grant no man a more enthusiastic belief in the utility of digitalis in the treatment of very many cases of pneumonia, but because of its symptomatic indication and not because of any specific action in this disease. The salicylates and the iodides have also a very definite indication in delayed resolution and perhaps in some few instances of streptococcus infection, but not thru any specific action which they play in the disease pneumonia itself. Until science has given us something far more certain than it has thus far, let us lay aside the question of the specific treatment of pneumonia and turn our attention to the far more definite and successful field of symptomatic therapeutics.

Mechanical. Under this heading we shall also include the methods of hydrotheraphy, tho I realize that the enthusiasts of this method of treatment will seriously object to have their methods classed as mechanical in action. Rather do they feel that the use of proper hydrotherapeutic measures stimulate physiologic processes in a more direct way. I shall dismiss hydrotherapy very briefly, discussing it solely from my own experience and admitting that there is a definite possibility in the method as applied by those who are skilled in its use. My own observations have been that it is of no definite utility, except as it may be employed to reduce temperature in some cases, and, tho I have had it used by the most expert operators, it has been my observation that it has caused the patient discomfort and it has in my opinon hindered rather than favored recovery because it has added to exhaustion and fatigue. To a certain extent it may be sensibly employed, to remove excess sweat, make the patient more at ease, and thru spronging at times to reduce the temperature. The use of cold packs and the like has in my opinion made the patient more uncomfortable and increased rather than lessened exhaustion.

Much was made by the older physicians of the use of cupping, the application of sinnapisms, blistering and so on. These practices are still to a cerain extent in vogue, principally among our foreign populations. Probably they may to a very limited extent mitigate the pains of a pleurisy, but it is althogether too much to expect that they will in any way affect the course of the pulmonary pathology or even that of the pleura. They cause the patient considerable discomfort, make satisfactory and painless examinations difficult, and their most beneficient result can be only on the relatives of the patient.

As to the pneumonia jacket, there are still those who advise its use, just why I do not know. They greatly hinder examinations of the chest. they cause discomfort from the retained sweat of the patient, and I see no reason why they may be of benefit, unless it be to conform to traditions which the patient or his relatives may hold.

Of course the pneumonia patient must be put to bed. Ordinarily one also insists on the lying flat in bed, but there are a good many instances in which this is not advisable, as in previous cardiac diseases, in extensive pleural effusion, in asthma, and in some instances of quite uncomplicated pneumonia, in which nevertheless the patient feels more comfortable more or less raised up. When this is the case the patient may be supported on a comofrtable bed rest or by pillows. If the patient is not delerious or unconscious, his own desires may be consulted to a considerable degree as to the position which he finds most comfortable.

Once the diagnosis has been made, I strongly insist that no unnecessary examinations shall be made and only when for some definite reason this is found to be necessary. Much harm is done from unnecessary minute and too frequent examinations in cases of pneumonia. Even where it is desirable to demonstrate cases to students, perhaps as valuable a lesson as the medical student can learn is how to examine the pneumonia patient without causing him discomfort or entirely unnecessary exhaustion. Inspection alone can show us much of the necessary data in a pneumonia case and I feel that, after diagnosis has been confirmed, the fewer the full examinations the better, until perhaps the question of empyema appears which may necessitate a detailed study. In every case the patient's comfort should be the first consideration after the necessary data as to the condition of the pathology have been ascertained.

A mechanical procedure, which I feel is often unwisely neglected, is the employment in suitable cases of venesection. This is a very beneficial therapeutic measure, applied only, of course, in carefully selected cases and in most instances only in the early stages of the disease or those in which an overburdening of the right heart seems to be present. It should not be performed except when cyanosis of definite degree is present, unless the blood pressure be abnormally high. It is rarely advisable except in plethoric persons or in instances of hypertension. It is most helpful in suitable cases, and it is probably too infrequently now resorted to in our routine practice.

Drug Treatment. In the author's opinion, as a rule few or no drugs are required in most cases of pneumonia, and with one exception he feels that the need for medication must appear before any drug is advisedly prescribed. I do not, of course, refer here to the use of such cathartics or laxatives as may be found necessary, for it is a primary requisite that the bowel must be kept freely open in pneumonia. There is, however, one drug which I believe should by preference be given before it is needed. This is digitalis. Death in pneumona is almost always from a circulatory failure and the most common cause of this circulatory failure is a myocardial degeneration or inflamation. To get the best effect from digitalis it must be given before the heart muscle is either in a state of inflammation or degenerated. Most but not all cases of pneumonia are eventually benefited or improved by the administration of digitalis. Yet I do not council its universal employment. In cases wth a known heart defect I do believe that diagnosis and the introduction of digitalis should synchronize, but otherwise I do not begin the drug until some signs of circulatory defect seem to impend or until it seems reasonably certain that the case as a whole is to be a severe one. In infants and children, I employ the drug infrequently, but as age increases I use it with increasing frequency and dosage. It will not do to wait until serious signs of heart defect appear, that may be too late; it is certain that clinical experience in pneumonia has demonstrated beyond reasonable doubt the value of digitalis in this disease, whenever the circulatory efficiency appears to be compromised.

As a rule I start in with full dosage, fifteen or twenty minims of the tincture every two or three hours for the first twenty-four hours, with then a rapid reduction unless the case demands otherwise. In known cases of cardiac defect I often digitalize by the rapid method with thirty or forty minims three or four times daily until digitalis effects are produced. Once digitalis effects have been produced, I either cut out the drug or reduce its dosage very materially unless some indication for its employment presents.

As a rule I employ the tincture, but I have also used many of the hypodermic forms, the pulverized leaves, and in suitable cases intravenous medication. In some cases digitalis acts less satisfactorily than strophanthus and I have in a few instances substituted convalaria but I believe with little or no benefit.

Where the muscle irritability appears to be impaired, I may use strychnia with the digitalis. I no longer consider strychnia itself as a heart stimulant, but it certainly does increase contractility and probably muscle irritability also, and it may often be given with digitalis very satisfactorily.

Caffeine is my drug of second choice in instances of circulatory failure in pneumonia. I advise against its employment in cases of active delirium and in those instances in which sleep appears to be very necessary. Camphor is also a very useful drug, preferably of course given intramuscularly or subcutaneously. Its advantage, and at the same time its disadvantage, is its evanescent action, but it is very helpful, especially in cases of collapse and perhaps particularly when respiratory failure is threatened. I also use adrenalin, especially in those instances which manifest marked hypotension and which appear to be going into shock or collapse. In intensely shocked cases it seems to act better, if given with a little thyroid. When there is marked abdominal distention I may employ instead pituitrin.

I think that it is apparent to you that all these drugs are employed for symptomatic reasons and few or none of them, except perhaps the digitalis, in anything like a routine manner. I hope, also, that it is obvious to you that in any symptomatic crisis I would use those drugs and other measures which the circumstance indicated; for example, in acute edema of the lungs I should give atropine. Where, as sometimes occurs in streptococcus hemoliticus infections particularly, severe pulmonary hemorrhage develops, I should give thromboplastin, gelatin, horse serum and the like.

In most cases, where cough is a particularly annoying or exhausting feature of the case, I believe that it should be controlled if possible, not only because of the exhaustion which it produces or because of the strain which it adds to that which is always imposed in this disease on the right heart, but also because it destroys the rest of the patient and in my opinion favors the spread of the process thruout the lung. Codeine is the first drug to be considered for this purpose, for I assume that in any such instance you have already introduced digitalis medication. If the codeine fails, as it may do, heroine may be employed, but probably in resistant instances sooner or later you will be forced to resort to morphine. I am aware that there is a long standing tradition or prejudice against the use of morphine in pneumonia, but insofar as I can determine it is founded on no real substantial basis, except that its employment is not advisable in those infrequent instances in which usually, thru severe toxemia, marked slowing of the respiratory rate has followed. Morphine properly used is one of our very best drugs in pneumonia. It is a cardiac stimulant. It lowers nervous excitement and exhaustion. It slows the respiration, which in most instances is pathologically augmented and, most important of all, it gives rest in a disease in which rest is most acutely needed. Of course, it is not to be used carelessly or merely to quiet a petulant patient but, when it is indicated as in great restlessness, in annoying and exhaustive cough, it is one of our most beneficial drugs for use in this disease.

We are all of us all too prone to neglect the renal state in pneumonia. As a rule little attention need be paid to the temporary reduction in urine output, to the albuminuria and the appearance of casts and occasional red blood cells in the urine in cases of pneumonia, but when these conditions persist and the urine output becomes regularly reduced, casts and blood cells appear in increasing amounts, edema is likely to appear and a serious renal complication may develop before our full realization of its danger. In such instances the diuretics, particularly diuretin, caffeine and theosine must be given, hot packs may be necessary, and, if the blood pressure has ascended, a venesection may become imperative.

It may be necessary at any time to manage
the case more as a renal problem than as a [illegible]
of pneumonia. It is in ca[illegible]
particular that bicarbon[illegible]
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very beneficial in cases which appear to be somnolent, depressed, instances which may perhaps be as well classed as acidosis as anything else, but certainly much remains to be proven before we are scientifically justified in assuming that we are dealing in these circumstances with a true acidosis.

One of the most annoying and at times very serious complications which we must be prepared to meet in any case of pneumonia is that of severe tympanites. In some cases it will promptly respond to simple catharisis, in others to turpentine stupes; at times pituitrin, as I said a few minutes ago, acts splendidly, but my experience has led me to place most faith for relief from the use of colonic lavage, preferably with alkaline solutions.

Because of the returned advocacy for the use of oxygen inhalations, I must say a word in regard to it. In my experience it meets a real need only in those few instances, in which severe cyanosis not due to cardiac defect is present. In certain of these cases, particularly in such as suffer from a very extensive pulmonary involvment, considerable temporary relief of the cyanosis with occasional relief of dyspnea may be effected by oxygen inhalations. In other instances, in which one might theoretically expect this relief, it fails to materialze and I know of no basis of determination as to its benefits except the experiment. That it has a very limited field in pneumonia is, I think, the verdict of nearly every clinician of wide experience, and in many instances it certainly increases the discomfort of the patient and intensifies the delirium, if such be present.

There is still another symptom which arises with such frequency in pneumonia that it must be briefly mentioned at least, even as this late period in my talk. It is the delirium which is both so frequent and so disconcerting, whenever it occurs. There are two types, that which
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more obscure in its origin, much more serious and much more difficult of management.

In the early type it may be reduced or controlled by the use of cold sponges or by the employment of the bromides, or adalin, luminal and of other sedatives of this character which are not contraindicated at this phase of the disease. Morphine, codeine and hyoscine are not usually demanded. Unfortunately, in very many instances even the more powerful sedatives appear to but accentuate the delirium and not to relieve it. In most instances when sleep can be induced, great relief if not entire disappearance of the delirium follows, and our prime object in these instances is to obtain sleep if possible.

Perhaps it will now suffice if I summarize what appear to me as the most important primary considerations in management of this large group of disease conditions.

SUMMARY

Every effort should be made to conserve the natural vigor of the patient. Nothing in the way of treatment or examination should be introduced which tends to exhaust the patient, except as in venesection for some very definite and pressing circumstance.

Carefully watch and anticipate any evidence of cardiac inadequacy. See that the renal functions are maintained. Drug just as little as possible, but do not fail to introduce such treatment as may at any time be indicated promptly and efficiently. Remember that our greatest danger is, however, over- rather than under treatment.

Remember that each case is an individual problem in itself, and, while there is very little except in type I pneumococcus cases which can be done to directly influence the disease itself, very much can be done to assist the patient to bear the disease. Do not despise the treatment of symptoms. The chief success in the management of pneumonia lies in apprehending this and in the early correction, where possible, of symptoms. You cannot give your patient too much personal attention. Pneumonia cannot be treated as a group, as a ward, or even as a disease entity. Success in its management lies definitely in the individualization of symptomatic management.

TREATMENT OF ADVANCED TUBERCULOSIS*

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In the treatment of advanced tuberculosis the primary consideration is that of prophylaxis and of secondary importance is the welfare of the individual patient. Let us commence the patient's treatment directly following the diagnosis of tuberculosis, as he is most susceptible to lasting impressions at this psychologic time.

OFFICE ADVICE

1. *Diagnosis.* First inform him that he has a well developed case of pulmonary tuberculosis, not weak lungs, congested area, spots on the lungs, a little touch of pleurisy, a tendency toward tuberculosis, asthma, bronchitis or any other misleading term which lulls the patient into a state of false security. No prophylaxis will be observed, if the patient does not understand the actual menace he may be to his family. And no individual is going to spend the time and money necessary to overcome his disease, unless he definitely understands that he has tuberculosis or consumption.

2. *Climate.* Do not tell him, if he does not beat it for California or Arizona, he will not live six months. Climatic change is of very doubtful value and not to be compared with other factors in treatment.

3. *Food.* Do not tell him to go home and eat all he can, to take all the milk, cream and eggs he can down. Thousands follow this advice to the letter with the result that thousands "blow up" with permanently deranged gastrointestinal tracts and thereby lose the greatest asset the tuberculous patients possesses.

4. *Rest.* Do not simply say, "get plenty of rest." Some will interpret that as lying helpless in bed for weeks, others resting a few hours in the day and spending the rest of the time hill climbing, hunting or fishing.

5. *Fresh Air.* The brief advice, "sleep with your windows open," is frequently followed with ten hours in the open at night but with fourteen hours around a hot stove in closed room during the day.

6. *Prophylaxis.* The advice "sleep alone, burn your sputum, boil your dishes," is far too meager to prevent others in the family from being infected.

7. *Conclusion.* The numerous phases of prophylaxis and the chief points of treatment must be gone over in careful, detailed manner so the patient will have a firm foundation upon which to begin his treatment.

PROPHYLACTIC TREATMENT

1. *Individual Instruction.* If the case is kept at home, bear in mind that infants and little children are very susceptible to infection. In fact, it is impossible to avoid infection of young children in the home of an open case of phthisis. Either have a tent or a separate building with instructions that the young children do not go there, or else remove the children.

Carefully instruct the patient regarding the dangers of sneezing, coughing into the open, careless disposal of sputum, fondling of the children, or the handling of their food and toys, and the necessity of boiled or separate dishes.

2. *Reporting Cases.* Immediately report all cases of tuberculosis to the Health Department Office, so that they may assist in the prevention of further infection. And, finally, visit your patient at least often enough to see that your instructions are being carried out, that the members of the family with whose protection you are charged are not being exposed.

INDIVIDUAL TREATMENT

In the treatment of the individual patient in advanced tuberculosis the four great essentials—rest, good food, fresh air and absolute supervision by one interested in tuberculosis—all must be as diligently applied as in early tuberculosis, for there are many cases at first apparently hopeless which, if held to a strict regime, will gradually recover. In order intelligently to instruct your patient, it is necessary for him to keep a chart, adapted for the record of pulse, temperature, appetite, sleep, bowels and weight, any unusual symptoms, and a place for the physician's instructions regarding rest, exercise, food, medication, etc.

1. *Rest.* This is now recognised as the most important factor in the treatment of active tuberculosis. Advanced cases should be kept in bed until activity has ceased and this can be determined better by symptoms than by physical findings. A very good rule is to keep the patient

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* Read before King County Medical Society, Seattle, Wash., Oct 9, 1922.

in bed one-half again as long as it took to control the fever or other symptoms of activity.

There should be certain periods during the day, preferably before and after meals, when the patient is at absolute rest. No reading, writing or talking and, most important, no visitors. If after a long time in bed the patient becomes restless, one should try placing him in a chair at an angle of thirty degrees, which has been found to give as complete a rest as lying prone in bed. If after an extended rest it becomes evident the case is hopeless, then one should be more lenient, thinking only of the patient's comfort.

2. *Exercise.* Rest, like any other good thing, can be overdone, for many of these cases after a prolonged period in bed require exercise. This is a great danger time for the patient and calls for experience and judgment on the physician's part, as it may easily be overdone. Exercise at first consists of brief sitting up periods and later regulated walks. He must be taught while on his walks to go slowly and to sit down frequently. This conservation of energy must be so thoroly drilled into the patient that it becomes a part of his life.

3. *Food and Diet.* The gastrointestinal tract is the motor of the body in a tuberculous patient and, as long as that functionates properly, the outlook is usually favorable, but when that begins to "miss fire" we can look for a complete breakdown of the individual. Therefore, the great need for close observation and definite instruction regarding food.

(a) *Regularity.* It must be insisted upon that all meals be served at regular intervals. Do not let the patient sleep late and skip his breakfast or get into the habit of delaying a meal until he is hungry.

(b) *Amount.* Many cases will make a satisfactory gain on only three meals daily and are less prone to gastrointestinal disturbances. Occasionally better results are obtained by giving milk between meals. The diet must be frequently checked over to ascertain if the patient is taking sufficient or superabundant food.

(c) *Kind.* Good, plain, well-cooked, daintily served, not rich or highly seasoned food, with limited amount of milk or eggs will care for most cases. Between meals eating of candy, pastries or any other food not ordered must be strictly forbidden.

4. *Fresh Air.* It is a very difficult thing in the home to keep the windows open both day and night, but the only exception should be when the patient is eating his meals or having his bath. He should not be permitted to slip in by the fire and toast himself, as these extreme changes are productive of colds and also a hindrance to hardening. The advanced case unless absolutely hopeless will become as hardened to outdoor life as the early case and should be held to as strict a regime until it is proven beyond a doubt that the case is steadily declining, when only the comfort of the patient should be considered.

5. *Supervision.* Unless these remedies are properly supervised by one vitally interested in tuberculosis work, the results are usually very unsatisfactory.

SYMPTOMATIC TREATMENT

1. As far as possible the symptoms should be controlled by management rather than medication but whenever drugs are employed one must first ascertain if they will have any deleterious effect upon the gastrointestinal tract, as it is imperative that these vital organs be kept in good condition.

(a) *Cough.* Control is imperative, as hard or frequent coughing is a serious strain upon the lungs and entire body. In the home there is danger of taking too many cough drops, cough mixtures and upsetting the stomach instead of making sufficient effort at voluntary control. Often, however, the cough is very troublesome and sedatives must be given. Codeine and heroine in as small doses as possible are the most reliable drugs, but they should be used only as a necessity and not as a standing medication. All cough remedies should be prescribed in very simple form.

(b) *Expectoration.* The so-called "expectorant remedies" have little use in tuberculosis treatment, for it seems all that is usually obtained is a disordered stomach. Hot drinks, cold or hot applications to the chest, posture or inhalation should be sufficient.

(c) *Pleurisy.* This requires rest in bed, good intestinal elimination, restricted diet and local applications of iodine, mustard plaster, hot water or ice bags. If not sufficient, fixation of the affected side with adhesive plaster. Finally it may be necessary to resort to an opiate.

(d) *Effusion.* It is not advisable to make any effort to hasten the absorption of the fluid, for it may be serving a useful purpose by compressing the lung and facilitating the healing of the lesion in the same manner as artificial pneumothorax does. But, if the effusion causes severe mechanical disturbance, it should be partially aspirated. Frequently good results are obtained by withdrawing all the fluid and replacing it with air.

(e) *Hemoptysis.* Reliance must be placed on keeping the patient absolutely quiet in bed, restricted diet and cough control. Our most valuable drug is morphine. If the bleeding continues, artificial pneumothorax must be considered, if it can be ascertained from which side the bleeding occurs.

(f) *Dyspnea.* The cause must be determined. It may be pleural effusion, pneumothorax, pneumonia or, as in many progressive cases, cardiac weakness. Morphine is most gratifying.

(g) *Tuberculous Laryngitis.* Always a serious complication but not as hopeless as once believed. All cases should be put on a whisper or on silence. Most cases do better with no local application. Some mild inhalant, such as 1 per cent menthol in liquid albolene, is sufficient for many cases. The application of local escharotics and cauterization should rarely be employed. Quartz lamp and the arc lamp have in the last few years come into prominence in the treating of this complication. In progressive cases, where pain is causing disturbance of rest or difficulty in swallowing, palliative treatment must be applied, such as laryngeal insufflations of orthoform or anesthesin. If this is not efficacious, a spray of cocaine solution or injection of superior laryngeal nerve with alcohol may be done.

2. *Gastrointestinal Tract.* Before treatment is instituted the patient should see his dentist, as abscessed teeth or insufficient chewing surface invite digestive disturbances.

(a) *Anorexia.* Careful regulation of rest, diet and exercise will suffice in most cases to improve the appetite. In a large percentage of cases error in diet is responsible. That oft repeated phrase, "take plenty of cream and eggs," leads toward disgust of food more than any other single factor. Some patients can handle two to three quarts of milk and six to twelve eggs daily, yet in the majority of cases the digestive organs will revolt. There is nothing gained when the patient puts on weight at the expense of the digestive tract. In some cases one must resort to medication to provoke an appetite, such as bitter tonic. One of the most helpful is nux vomica.

(b) *Nausea.* Attacks of indigestion are treated by castor oil, followed by liquid diet for a couple of days. Nausea is commonly due to errors in diet or in medication.

(c) *Constipation.* This is best controlled by proper hygienic, dietetic measures but mild laxatives must be given sometimes. The promiscuous use of carthartics is to be deplored in tuberculosis. The only laxative needed in 95 per cent of cases is mineral oil with bran or agar-agar.

(d) *Diarrhea.* Enteritis and enterocolitis in the tuberculous patient are frequently immediately diagnosed as tuberculous, with a feeling it is hopeless and therefore immediate energetic treatment is not given. After corrective errors of diet or medication, forced feeding, abuse of carthartics and expectorants, the patient should be placed upon a nonirritating, easily assimilated diet. Absolute rest in bed is indicated. Hot applications to the abdomen following meals are very helpful. Some medication may be needed to control bowels, such as bismuth or tannigen.

(e) *Intestinal Tuberculosis.* The most serious complication is intestinal tuberculosis. This has formally been looked upon as a fatal complication but, under improved methods of diagnosis and treatment, numerous cases have recovered. They require a nonirritating diet and careful regulation of the bowels. Some very satisfactory results have been obtained by the aid of heliotheraphy, quartz and the arc light. Surgery has not yet given uniformly good results. One would be justified in trying diet, regulation of bowels with mineral oil, or bismuth, tannigen, intravenous injections of 5 per cent calcium chloride and light treatment before resorting to surgery.

3. *Fever.*

(a) *Rest* is our strongest factor in the reduction of temperature and it must be employed over a period of months. If, after a period of prolonged trial, the temperature fails to decline and the patient becomes restless, one is justified in trying out short periods of sitting up. The change with its slight stimulation and psychologic effect often proves beneficial.

(b) *The diet* of a febrile patient depends entirely upon the individual. Some patients with fever below 100 deg. F. are able to handle only a very light diet, whereas others with a high temperature can take a full diet with no strain on the digestive tract, but a general diet is best if acceptable to the alimentary canal.

(c) *Baths.* Hydrotherapeutic measures have not been found satisfactory in the treatment of phthisis.

(d) *Drugs.* Empirical reduction of temperature should seldom be employed but, if it gives the patient more comfort, leaving no ill effects, it is at times justified. The most useful remedy is pyramidon, not only for lowering the temperature but for the prevention of chills. One must always be certain no complication is causing the fever, such as constipation, acute gastritis, tonsillitis, influenza, pleuritic effusion or focal infection.

MEDICAL TREATMENT

Because numerous remedies have been advocated as cures for tuberculosis but soon found to have no specific value, there has developed a trend of thought that medicine has no place in the treatment of this disease.

Tuberculosis is in the class with pneumonia, anemia, cold, bronchitis, rheumatism. There is no specific remedy, nevertheless valuable aid can be given by proper medication. The intelligent prescribing of drugs requires careful observation and study of the case. There is a tendency in such a long drawn out chronic disease as tuberculosis for the physician gradually to feel that nothing more can be accomplished. But, if he would keep constantly alert to the changes in his patient and vary his medication or treatment accordingly, that case would feel something definite was being done. He would continue under the doctor's observation and not wander off with that hopeless feeling that the regular medical profession has nothing further to offer than that oft repeated phrase, "go home, rest, sleep outdoors and take plenty of cream and eggs."

We must admit that medicinal agents, whether thru their own virtues or thru psychic suggestion, always inspire confidence in the physician, but there has been a great abuse of drugs. Some observers claim that 50 per cent of dyspepsia in the tuberculous patient is due to improper medication. Various drugs or chemical products have been employed in treatment of tuberculosis but only a few survive in actual practice.

(a) *Creosote.* When administered in proper cases, it improves the appetite, stimulates the digestion and assimilation, improves nutrition and diminishes expectoration but it should never be routinely used in tuberculosis because it frequently provokes gastric disturbance.

(b) *Arsenic* has been found an excellent stimulant of nutrition and a hematinic. One of the methods of administration is by hypodermic injections of the different cacodylates.

(c) *Iron Citrate* subcutaneously or intravenously is probably one of the best methods of medication for anemia in tuberculosis.

(d) *Hypophosphites and glycerophosites* are a safe tonic extensively used on the theory that tuberculosis is a manifestation of lime starvation.

(e) *Opium* and its derivatives are invaluable in many of the advanced cases. The hopeless, advancing case should be made as comfortable as possible by their use. There are other valuable drugs which by their proper use will give material aid to the tuberculous individual.

TUBERCULIN

In the treatment of advanced tuberculosis tuberculin has a very limited field. If properly given it will do no harm, and in a few chronic, sluggish partially quiescent cases it appears to stimulate to further healing.

SURGERY

Strictly surgical procedure within the chest is still very limited but there is one operative measure we can offer certain types of cases which frequently produces marvelous results, and that is artificial pneumothorax. No unilateral case or one with only a slight amount of activity on the better side should ever be allowed gradually to fail without giving pneumothorax a trial. Severe hemoptysis can be completely controlled, if the bleeding lung can be collapsed. Artificial pneumothorax is one of the brightest spots in the treatment of advanced tuberculosis.

CONCLUSION

In conclusion, let us continually keep in mind that the advanced case of tuberculosis is the chief source of all tuberculous infection and that our primary duty is that of prophylaxis, the handling of our case in such a manner that infants and children are not exposed and secondarily the welfare of the individual patient.

Let us realize there is no other disease, where the outcome depends to such an extent upon careful, detailed treatment and close cooperation between physician and patient as in tuberculosis.

Let us be so filled with faith in the scientific treatment of tuberculosis and so fired with its zeal, that we can stand beside these patients, if need be for months, and by our optimism and careful, skilful efforts help them so to live, that their families are not endangered and they themselves are kept buoyed so full of faith and hope as ultimately to win against the great white scourge.

ADULT TYPE TUBERCULOSIS IN CHILDREN*

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It is well known that tuberculosis of children manifests itself in several distinctive types, the acute types of which are represented by the acute miliary, tuberculosis of the meninges or peritoneum, caseous pneumonia; and, in the more chronic forms, the disease limiting itself to the lymphatic system, the bones, joints and lungs. Tuberculosis of infancy runs a rapidly fatal course, and the morbidity and mortality rates are quite high. As the child grows older, at the ages where the opportunity for infection becomes greater, the disease pursues a more benign course, and in the age groups from five to fifteen, strangely enough, the mortality rates are lowest.

Tuberculous infection beginning in the small child increases from year to year, until after eighteen years practically everyone has received infection from the bacilius. From this it does not follow that everyone should necessarily die from tuberculosis, but it certainly is evident that everyone who does die from it has received the infection. Since there is such a widespread infection of the human race, particularly the civilized race, why does not everyone die from the disease, or why does it not manifest itself as universal clinical tuberculosis?

From time to time the child picks up some infection here and there; not, perhaps, enough to cause the disease, and which amounts can well be tolerated by the healthy, well kept child. In other words, the threshold has not been crossed, whereby the child would receive a massive enough dose to bring about the disease. The child who, thru close contact with an open case, that is a parent, nurse girl or associate, has received massive and repeated quantities of tubercle bacilli, usually develops the disease in the acute forms, and this gives our childhood mortality.

The average child, well raised and healthy, can take care of the repeated small infections it receives, and these are lodged in the hilus glands, walled in by fibrous tissue or by calcification, and his organism develops a strong immunity to his ever present focus of infection; in other words, he is receiving constantly a vaccination against the bacillus and the invading germ. From where, then, do our cases in young adult life come? Take your average child and let him receive a little more infection than his fellows, but not enough to cause a rapidly fatal disease, and all his resources are put to the task of fighting down his own infection. If to this heavy infection from parent or whom not, are added poor nutrition, poverty with its attendant miseries, exposure to disease, such as measles, influenza and the other host of causes tending to lower the general health and resistance of the individual, the former infetcion with or without the added superinfections begins to spread from the deep hilus glands, where it has been confined, into the lung parenchyma, and our clinical pulmonary tuberculosis begins to assert itself.

The races who have not known tuberculosis, upon contact with the white man, often get the disease in the acute form. This was particularly well seen during the great war, when there occurred among the Asiatic and African soldiers of the Allies, many cases of tuberculosis in the acute form, which type in civilized countries is only seen among children. This must be due to their lack of early infection and corresponding immunity, plus to a lesser degree other factors.

We know there is a difference of opinion as to primary adult infection and it must be conceded that there is every opportunity for added infection in the adult, but if the organism is already infected with the disease, it seems more likely that manifestation of tuberculosis in the adult results from lack of immunity rather than contracting a disease, with which he is already infected. Concerning this almost universal infection of the adult, the opinion of Col. Bushnell[12], voiced at the International Union against Tuberculosis, at London last year, may well be repeated. In substance it is that a basic fact is that a large majority of civilized mankind is infected with tuberculosis. That they did not die of it was the best proof that tuberculosis was not necessarily an evil. Might it not indeed be that the salvation of the people was to be sought in an optional tuberculization?

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During the last two years or so there have appeared in the literature several communications, in which attention has been directed to the occurrence of pulmonary tuberculosis in childhood. The usual manifestation of tuberculosis, involving the thorax of children, is deep peribronchial or bronchial hilus gland tuberculosis, which cases manifest the cardinal symptoms of the disease, namely, weakness, failure to gain weight or loss of weight, night sweats, temperature, with or without cough, and diagnosed by history, symptoms referred to, as well as physical findings; parasternal or paravertebral dullness, positive d'Espignes sign, bronchovesicular or granular breathing, or even weakened breath sounds, with radiographic confirmation by enlarged hilus glands and with changes in the bronchial markings.

By the adult type tuberculosis is meant pulmonary tuberculosis or chronic phthisis. The cases so designated in this study are those which presented some or all of the salient points in the diagnosis of this condition. Briefly they are, aside from history and usual symptoms, including hemorrhage in some cases, impairment of resonance or dullness, increased vocal fremitus, changes in breath sounds, bronchovesicular or granular breathing, or in some cases decreased breath sounds, presence of typical medium and small moist rales, or in the presence of cavitation, large moist rales, gurgles or squeaks, with bronchial or amphoric breathing, whispered pectoriloquy or egophony.

As far back as 1831, Laennec[1], the founder of modern physical diagnosis, in his work on diseases of the lungs, states that in the Children's Hospital in Paris, one-eighth of the children who died between the ages of one and two were tuberculous, this ratio increasing with each year up to the ages between four and five years, when three-fourths were tuberculous.

Opie[2], of St. Louis, performed autopsies on ninety-three children under eighteen years of age, and fifty adults, radiographs of the lungs being taken in each case, and nodules shown being dissected out. In the doubtful cases the lesions were checked by microscopic examination. His findings showed an average incidence, up to eighteen years, of 23 per cent, and from eighteen on up, averaging for the entire group 100 per cent. Of two hundred consecutive autopsies from the pathologic service of the Boston Infant's Hospital, during the past two years, Lawrence Weld Smith[3] reports a 20 per cent incidence of tuberculosis. The opinion as to the rarity of the pulmonary type of the disease among children is based on the work of many keen clinicians of vast experience and represents clinical study of many thousands of cases.

Gibson and Carroll[4] found from a study of 265 cases, admitted to the Connecticut State Tuberculosis Sanatorium, which institution is now used exclusively for children, 197 to be suffering from tuberculosis in some form. Of these, 34 were of the pulmonary adult type. These 34 cases were diagnosed by the usual physical findings, and in nine of them cavity signs were obtained, as well as positive sputum in eighteen. These findings are of course quite unusual.

In this same communication Fishberg is stated to have found only twelve cases of pulmonary tuberculosis in children from four to twelve years of age, and Sawyer[11], diagnosed twelve positive cases by physical examination, in the examination of 8,000 children under fifteen years of age.

During the past year the Department of Health, of Seattle, reports eighteen cases of pulmonary tuberculosis in children. Of the children in the wards at Firland Sanatorium, the Seattle municipal tuberculosis sanatorium, there were two incipient, six moderately advanced and two far advanced cases.

Of the 300 children studied in the children's tuberculosis clinic of the Michael Reese Dispensary, in Chicago, only three were suffering from active pulmonary tuberculosis[5]. Hempelman and Cooke[6], from a study of 1,556 children at the Washington University Clinics, St. Louis, found

116 cases of manifest tuberculosis of various types, and have described a type of tuberculosis and called it "masked juvenile tuberculosis," which form is not idental with the usual childhood deep hilus nor yet that of the adult type. O'Brien and Ames[7] found three positive open pulmonary cases in forty-four children with this disease in the Boston Children's Hospital.

Harms[8], in the Children's Welfare Station at Mannheim, reports 100 cases of pulmonary tuberculosis, sixty-five of which had positive sputum, the other cases being diagnosed by physical findings and x-ray. Rachel Ash[9] a few months ago, in the California State Medical Journal, reports a case of a child two years old, with physical signs of pulmonary tuberculosis, which diagnosis was confirmed at autopsy. On the other hand Max Pinner[10], in the examination of 721 school children, six to fifteen years of age, found 22 per cent with bronchial gland tuberculosis. It is thus seen that pulmonary tuberculosis is more common than is usually believed; and, while there seems to be a wide variation in the observation of different workers, yet it is evident that many such cases do exist.

In the last three years, since leaving the army and taking up practice in civil life, there has come under my observation an exceptional number of cases of pulmonary tuberculosis in children. This study includes only cases picked at random during this period in practice, and at the Riverton Sanatorium as well some from the service of Dr. Stith at Firland Sanatorium, and the Seattle Children's Tuberculosis Clinic. In all there are some thirty-five cases, whose ages vary from six months to fifteen years of age.

Of these twenty-seven had contact for variable periods of time with open tuberculous cases in parents or relatives. Sixteen had sputum, in which the tubercle bacilli were demonstrated. Thirteen were incipient cases with the lesions confined to one lobe or small parts of two lobes. Four were moderately advanced and the remaining eighteen were far advanced. Seventeen cases showd cavity formation, diagnosed by physical examination and radiograph, and when possible by autopsy.

Attention may be directed to a few of the cases which will exemplify the purpose of this paper.

Case 4. A child of four, with Pott's disease, who had a tuberculous parent, showed massive consolidation of the entire left lung and right lower lobe, and at autopsy showed fibrocaseous areas thruout the involved lobes, as well as a small cavity with thick walls in the left lower lobe.

The most unusual case of the series, and still alive, is an infant six months old, whose weight at birth was seven pounds, and who now weighs six pounds, and shows typical physical findings of consolidation of the left upper and left lower lobes.

A physician of the revenue cutter service, while on duty in 1913, had occasion to visit the Aleutian Islands for a time, which are inhabited by Indians. He informs me that he saw many cases of children who were living in close contact with tuberculous parents, and he was impressed by the fact that a large number of children, even babies in arms, had pulmonary hemorrhages; and physical examination revealed all the signs of pulmonary tuberculosis.

It is not within the province of this paper to try to explain why such an unusual number of the more chronic or benign type of the disease, if such a term can be applied, should be found in such a comparatively short time, but it cannot but impress one, when in a practice dealing with tuberculosis of all forms and ages, that in the course of some three years he should find this number of cases.

As is generally known and conceded among the profession of this section of the country, all of the childhood infectious dseases, as well as those of adult life, have a tendency to manifest a more benign type than is the usual experience in any other part of the country. And as the general nature of the Aleutian Islands is very similar to this part, and from the experience of the medical officer, who made observations mentioned above, one is inclined to wonder if the mild climate in this section of the country may not in some measure have some bearing on the subject. The question of climate has been raised so often, and there is much difference of opinion now existing as to the role played by it in this disease. It is not believed that the type of infection present here differs in any way from that of any other locality; nor is it any more benign, or apt to cause chronic rather than acute tuberculosis of children, nor do we believe there is any more natural resistance in this section, nor a hardier people on the coast than in any other place. It remains to be seen with the development of the study and the search for such types of cases, as is being done, if childhood tuberculosis of the adult type is not quite as frequent in any other community as here.

This report would be more complete, could a record of the hundreds of cases examined in the Seattle Tuberculosis Clinic for Children, as well as the many cases hospitalized in the children's ward at Firland during the past few years, have been carefully studied and all such cases discovered. It is hoped that attention will be directed to the presence of this type of disease among children, that it may be discovered early before those surviving pass on to the adolescent stage, when the disease is advanced to such a degree that chances for aid have been lost.

When children are seen with large cavities, positive sputum, and all the findings of advanced phthisis and the history of a sickness only a few months in duration, one cannot but wonder that the disease was not diagnosed in its incipiency, for children showing such resistance as to be able to hold down the disease for months and even years and develop this type of tuberculosis certainly should be given every opportunity for the arrest of the disease, of which early discovery is by no means an unimportant factor.

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VOMITING IN INFANCY AND CHILDHOOD*

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Vomiting in infancy and childhood may be due to a great many different conditions, some of which may be very simple and others of very serious significance. As a symptom it should never be passed over lightly but its full significance should be sought immediately at its onset. The term "vomiting" in the scope of this paper, will mean any form of food expulsion, from the simple so-called "spitting up" to the persistent, projectile, severe vomiting seen in grave conditions.

From the standpoint of the etiology of vomiting, we observe, first, simple regurgitation. This may be caused by the over filling of the stomach by the infant getting too much food at a single feeding or from being fed too often at the breast or from the milk being retained in the stomach because it is too rich, especially in fat. This disturbance occurs usually in that type of breast-fed infant, who shows a more rapid gain in weight than the average, and who usually has severe colic many times a day. While they enjoy good health they are restless and may have many large evacuations each day.

Regurgitation may also be caused by a collection of gas in the stomach or bowel. This air may have been swallowed or may have formed in the gastrointestinal tract from an indigestion. In the eructation of this air, small amounts of milk are expelled.

The diagnosis of simple regurgitation is very easy and is usually made from the history and the evidences in the child of overfeeding. The amount of food ingested is determined by weighing the baby before and after each nursing and this amount is commonly found to be excessive. An excessive amount of fat in the mother's milk may be determined, but an analysis of breast milk is of very little or doubtful value, except perhaps in this one determination of fat percentage. A little care in determining and correcting the cause of vomiting in these cases will meet with very satisfactory results.

An excessive amount of breast milk may be reduced by shortening the length of time the baby nurses and by lengthening the feeding interval. It must be insisted upon that the baby does not nurse more often than every three hours and in some cases even a four hour feeding interval will obtain more relief. A high fat breast milk is easily modified by offering the baby a small amount of plain water before each feeding. If the baby is nursed in the upright position there is less trouble from swallowing air. If these suggestion fail to cause improvement, there is usually no cause to worry or any reason for further change in the feeding because by this time it has been determined that the vomiting is only an insignificant symptom in a baby who is being raised under a healthy rational regime.

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Pyloric obstruction is a frequent and important cause of vomiting in infancy, especially in early infancy. The obstruction may result from either spasm or stenosis. In some cases the differential diagnosis of these two conditions is difficult. Further difficulty also results from the association of spasm in the cases of real stenosis. In other words, pylorospasm can exist alone but pyloric stenosis has an added element of pylorospasm.

However, I wish to take up as a definite entity, pylorospasm in itself. Pylorospasm is undoubtedly due to a spasm in the pyloric ring without any organic stenosis. The vomiting is projectile, severe, usually comes during or after every feeding and sometimes is prolonged until the beginning of the next feeding. We believe that the mildest pyloric spasm cases can be habitual vomiters.

The infant is usually nervous and alert, and the spasm is oftentimes associated with pain, which is usually relieved by vomiting. In these cases the weight is often stationary but sometimes the child shows a slow gain, but much less rapid than the normal. This condition is a distinct neurosis in itself. There are usually no gastric contractions and one is seldom able to palpate a pyloric tumor. These cases present a history of very irregular vomiting, sometimes going for four or five feedings without any vomiting and oftentimes temporarily relieved by change of food.

The diagnosis is usually made on the above symptoms with the following therapeutic tests: Atropin sulphate, given in doses of one one-thousandth of a grain in the food or immediately before each feeding, will often give relief. In most of our cases it has been necessary to give only one one-thousandth of a grain three times a day. If there is profuse sweating after the dosage, or the face becomes fiery red, the atropin is immediately stopped. In many babies even this small dose of atropin per month will cause marked flushing of the face, excessive perspiration and evident stimulation or excitement as shown by spasmodic movements of arms and legs. The dose may then be given less frequently, but often a reduction in the dosage will result in a recurrence of vomiting. The second therapeutic tests as to the diagnosis of pylorospasm is the usage of the thick cereal or porridge feeding.

Another entity under pyloric obstruction is pyloric stenosis. There is no illness of infancy that shows such a definite time in the onset of its symptoms as pyloric stenosis. In almost all cases the symptoms appear in the last half of the first month, altho in some rare instances symptoms from stenosis have not occurred until the fifth month.

The vomiting in these cases is very severe, is projectile in its nature and occurs at any time during the feeding cycle. Changes in foods will usually relieve for one or two feedings and then vomiting recurs with increased severity. The infants lose weight very rapidly and are soon a picture of great malnutrition. These gastric waves, best seen soon after a feeding, are observed to travel from left to right across the upper abdomen. A tumor is felt in about 50 per cent of the cases, one inch above and inch to the right of the umbilicus. In one case the gastric ptosis and dilation were of such a degree that the tumor was felt in the region of McBurney's point. The stools are very infrequent, scant, of foul odor and contain no milk curds. They are typical starvation stools. An x-ray examination with the bismuth meal will usually show a marked retention and delayed emptying time of the stomach. Straus thinks that an x-ray examination in most cases is necessary. In private pediatric practice we have not used x-ray examinations as a routine in these cases. Change of foods usually causes no prolonged cessation of the symptoms and these children vomit anything that is given them.

Our method of treatment in pyloric stenosis is the use of atropin, as in cases of pylorospasm, for twenty-four hours, and then, if there is no relief, the thick cereal is commenced. If loss of weight and vomiting continues on thick cereal feedings for a few days, we then resort to surgery. An operation immediately after the diagnosis is made, however, subjects many infants to an unnecessary operation. If the vomitting is lessened and the loss of weight is stopped on the thick cereal feeding, surgery is delayed. It has heen advised to allow no greater than 20 per cent loss of hody weight to occur on medical treatment before resorting to surgery. Persistent vomiting following an operation is often relieved by thick cereal feeding.

Psychic voluntary vomiting manifests itself in infancy by rumination. Rumination is a rare disease and still one sees it occasionally and it must be brought to your attention. It is commonly associated with bad heridity, bad mental training and absence of discipline. The condition is usually not recognized early, because of its being confused with a pyloric stenosis or a pyloric spasm, when severe.

The child is good natured and seems perfectly happy, when all of a sudden he will throw hack the head, straighten the body and make a distinct effort to vomit his food. These attacks occur at any time during or after the taking of food and usually are accompanied by a sense of satisfaction. The child will hold the food in his mouth for a moment, then make an attempt to chew and reswallow it. These regurgitant attacks will occur from twenty to eighty times during the first two hours after feeding. The diagnosis is usually not difficult, if one rules out spasm and stenosis. From the fact that no waves are seen, no tumor is felt and the child is not ill, these conditions can be excluded. The cases readily respond to treatment.

Strauss, in 1915, cured several cases by plugging the nose with cotton, so the child could breathe only thru his mouth; others have heen cured by holding the jaw forward, thus making it impossible for the child to regurgitate. Batchellor has used a cap with strings coming under the jaw, holding the jaws shut tightly in an uncomfortable manner. In this way the child was not able to regurgitate and was cured in four days. One of our cases was cured by the mother holding her hands over the baby's mouth in the form of a hopper, thus not allowing the food to be spilled and lost, but retained. Before the introduction of thick cereals, the above methods were considered satisfactory but difficult to carry out. The thick cereal feeding in these cases is almost a complete cure within a few days.

In childhood another form of psychic voluntary vomiting is the neurotic vomiting so frequently seen at the time of the beginning of solid food. If the child has not already been disciplined in any way, he usually fails to adapt himself to his environment and, if his food for the moment is not pleasing, he invents vomiting as a means of escaping taking the food. Many cases of persistent neurotic vomiting have been started in this way. The treatment in cases of neurotic vomiting is usually discipline and absolute disregard of the vomiting, and the forcing of the food one wishes the child to have.

Another form of vomiting one must consider is that accompanying the onset of the acute infections such as otitis media, pyelitis and scarlet fever. Vomiting must sometimes be considered as of cerehral origin as that occurring in brain tumor, tuherculous meningitis and hydrocephalus. The forms of reflex vomiting, accompany teething, worms and phimosis, tender gums, eye strain, fright and fatigue are of no importance in themselves and are usually easily excluded.

Cyclic vomiting, or the vomiting of acidosis, occurs usually in periods of from three to six weeks. The vomiting is usually severe and lasts for twenty-four hours, or longer, accompanied by slight fever. Acetone is usually found in the urine. It has heen ohserved that mild throat infections are often associated at the time of the vomiting attacks. In many cases removal of tonsils and adenoids in the interval between attacks has been followed by attacks of less severity and of less frequency or even by their complete cessation. In children subject to these attacks a tonsil operation will usually precipitate a so-called bilious spell of several days duration.

The diagnosis of cyclic vomiting is most often overlooked hy failure to examine the urine for acetone. The treatment for cyclic vomiting is usually heavy doses of soda introduced into the body by mouth and rectum. There is little difficulty in the retaining of soda per rectum as constipation usually precedes or is associated with the typical attacks.

In vomiting of intestinal obstructions, we must think of intussusception and the peculiar mucous vomit or regurgitation of congenital atresia of the esophagus and esophageal diverticulum.

The lack of knowledge among the general profession of the thick cereal method of the treatment of vomiting in infancy and its wonderful success in the treatment of pyloric stenosis, pyloric spasm and rumination, merits a description of its preparation and its method of administration.

The commonly used method was a mixture of 25 ounces skimmed milk, 5 tablespoonfuls farina, 2 tablespoonfuls of dextri-maltose and 2 tablespoonfuls of cane sugar. This mixture was boiled from 30 to 60 minutes in a double boiler, or until it was a mass so thick that it would adhere to an inverted spoon. Three to five tablespoonfuls of this was given every four hours, the child being fed five times in twenty-four hours. This formula has worked well in the most of our cases, but the mixture contains a very low fat percentage.

The safer method in the preparation of the thick cereal is by using a modified whole milk formula, normal for the child's age and weight and then adding 10 per cent of cereal, either farina or barley. This mixture is cooked from 30 to 60 minutes in a double boiler until the food is thick and tenacious. This thick cereal may be given to the baby by spoon or forced into the mouth with a tongue depressor. The best and easiest method that we have used is by making a large hole in the end of a hygeia nipple, then having the nurse keep the body of the nipple full of the cereal by crowding it down into the nipple with a spoon. The baby is thus allowed to take it by the sucking method. We have used the thick cereal method feeding in a great many cases of vomiting in infancy. In all cases which we have been able to follow, except those of severe pyloric stenosis, the vomiting has stopped and a remarkable gain in weight has occurred, following the use of this type of food.

Because of the more powerful contractions of the stomach, the thick cereal will pass thru when a fluid will not. After thick cereal has been fed, the patency of the pylorus has been found to be much greater. The starch in the cereal is a protective colloid and prevents the formation of hard casein curds.

In one case the vomiting stopped and the infant showed a fine gain on this food but the type of feeding was so strange that it was condemned and changed by the physician, when the case was seen by him on the infant's return home. Nurses, doctors and the laity in general for a while will condemn, on sight, this method of feeding infants as dangerous, until they are educated to its safety and success.

This method of feeding can be used almost from birth and I wish to recite one case of a vomiter that was cured in this way.

This baby vomited from the time it was born and I saw it on the third day. The vomiting was severe, persistent and the child was rapidly losing weight. There were no waves, no tumor could be felt and the bismuth meal progressed rapidly into the small intestine. This baby, at three days, was put on a thick cereal feeding, two tablespoonsfuls every four hours, five times a day. The vomiting immediately stopped. The child became happy and comfortable and the drop in weight was checked. The child had absolutely no other food for six weeks and in every attempt to give mother's milk or any other fluid the vomiting was resumed. The gain in weight was very rapid. After six weeks, one feeding in twenty-four hours at the breast was used with no vomiting. In about another week, two feedings and so on until the child was nine weeks old, when it was on the breast entirely without any vomiting. The child from this point was breast raised, grew very rapidly in weight and is now a perfectly normal child.

This review of vomiting in infancy and childhood has been short and rather incomplete but I hope it will encourage more attention to vomiting as a symptom, and encourage the profession to look for associated symptoms to lead them to a more careful differential diagnosis in vomiting cases. The terms "indigestion" or "milk does not agree" cover a multitude of mistaken diagnoses in many early conditions. We must have a clear conception of the manifestations and the symptoms of vomiting or we will lose valuable time in arriving at a diagnosis and very important time in giving the child the appropriate treatment.

END-TO-END INTESTINAL ANASTOMOSIS—AN EXPERIMENTAL STUDY*

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This subject has attracted the interest and stimulated the work of surgeons since ancient times. Its progress can be traced, step by step, with the great advances that have been made in general surgery. Nicholas Senn, in 1893, brought the subject to date in his address on enterorrhaphy. From it one obtains a picture of the vast amount of work that had been done up to that time. Parker and Kerr, in 1908, report the collection of more than two hundred methods of intestinal anastomosis, and estimated that from ten to twelve new ones were being described each year. Such in fact has been the case, and bids fair to hold sway till a simple procedure for end-to-end anastomosis has been published that is aseptic, reliable and adaptable to most all conditions and average equipment. No one man is going to discover it, but it will come thru the accumulation of ideas and suggestions offered by many.

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* Read before Seattle Surgical Society, Seattle, Wn., Dec. 15, 1922.

The late professor, William S. Halsted, was very active in this problem, and was beyond the question of a doubt the stimulus to more intelligent endeavor towards its solution than any other surgeon. His early observations are just as practicable as when made. His latest contribution demonstrates the great loss that surgery has sustained thru his death.

Lateral anastomosis has always seemed to me to be a make-shift, contrary to anatomy, physiology and mechanics. Cannon and Murphy showed its mechanical imperfections in 1906. Its one redeeming feature, however, is that it is strong. End-to-end suture is the ideal, but no method, as yet described, has found much favor; not enough, indeed, to keep surgeons from choosing the lateral with its defects.

I believe the suggestions of Walker, in 1908, and Parker and Kerr, in the same year, are along the lines that will be finally approved, but they turned in too much tissue at the suture line, which might cause obstruction in the human, if not in the muscular-walled intestines of the dog. Gatch, in 1912, described an excellent method in the same classification, but it did not become popular, probably because it seemed complicated. Shoemaker's technic has the drawback of requiring delicate incisions thru two coats of intestine down to, but not thru, the submucosa, and also that it loses sight of the important teaching of Halsted that the submucosa is the only coat of the intestine that can be relied upon to hold a stitch. It is the coat which furnishes the sausage its skin and the surgeon his catgut.

The operation that I wish to describe is in its experimental stage, and is mentioned now so that others may criticize or experiment with it at an early date. It is applicable to the large or small bowel for an end-to-end, or an end-to-side anastomosis. It can also be used to unite the duodenum to a resected stomach. It has been used with success upon a live animal.

The method is as follows: The diseased bowel is resected by means of clamp and cautery (fig. 1). The clamps used can be ordinary clamps, but should be as slender as possible and still crush completely. The narrower they are the less tissue is necessarily turned in. The two ends are approximated and the cauterized edges turned up so that a continuous Cushing mattress suture (No. 3) can be introduced as close to the clamps as possible (fig 2). When this loose continuous suture is pulled taut, the serosal surfaces of the posterior line of the anastomosis will be approximated (fig. 2, insert). After pulling this suture taut it is locked by taking an extra bite thru the two approximated edges.

When an intestine is crushed by the crushing clamp, the mucosa and smooth muscle tissue squeeze out from under the clamp, leaving the serosa and submucosa of the two walls to be compressed together into a fibrous ribbon; so now, when the two crushing clamps are removed, these two ribbons stand up stiff side by side. Both ends of these ribbons are caught in small hemostats and the ribbons held taut while one or more basting stitches (No. 4) are introduced (fig. 3). If one is not considered to be sufficient, the other basting stitch should be begun on the opposite side from which the first was, so as to alternate with the former. It is also advisable to see that each basting stitch will slip thru the ribbon when pulled.

Next the continuous Cushing mattress suture (No. 3), which had been locked, is continued around the bowel, as in fig. 4, submerging the ribbons and basting threads. Upon completing its circuit it is tied to its own end. The basting threads are now withdrawn. For reenforcement, especially at the mesenteric edge, Halsted's mattress sutures are introduced and may be continued all the way around where necessary (fig. 5). The rent in the mesentery is now closed. By grasping on each side of the anastomosis with the thumb and forefinger the approximated lips are separated within the anastomosis and the size of the stoma can be felt.

Fig. 6 demonstrates the procedure in start-

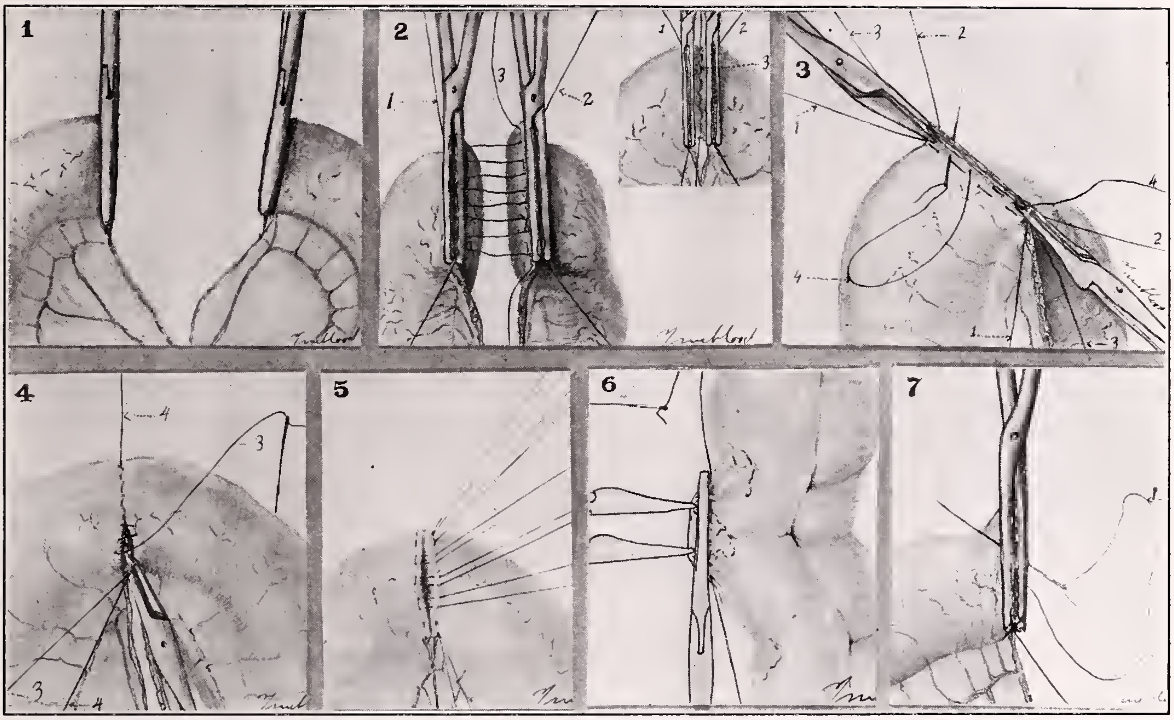

Fig. 1. The diseased section has been removed by clamp and cautery. Fig. 2. Disregard sutures Nos. 1 and 2. No. 3 is a Cushing mattress suture, placed as close to clamps as possible, which when drawn taut approximates the serosa of the two ends as shown in the insert. Fig. 3. Disregard sutures Nos. 1 and 2. Clamp removed and the ends of the two crushed ribbons held, while a basting stitch (No. 4) is placed to hold them together and sutured. No. 4. Cushing mattress (No. 3) continues around, closing in the narrow ribbon. Last hemostat about to be removed. Fig. 5. Basting stitch No. 4 withdrawn. Halsted mattress row about finished. Fig. 6. Showing method of starting end-to-side anastomosis. Tissue held in the two small hemostats cauterized away from crusher clamp. Extra basting stitch placed as in fg. 6, or can be omitted here and introduced as in fig 3. Fig. 7. Additional basting stitch placed close to clamp at each end before Cushing mattress is placed.

ing an end-to-side anastomosis. The tissue held in the two small hemostats is cauterized away from the crushing clamp. The ribbon held within this clamp is united with its partner as described above. In like manner the crushed end of the duodenum can be united to a resected stomach.

Should the surgeon hesitate to rely upon the closure of the intestine by means of the crushed ribbon, he can insert a basting stitch (No. 1), as in fig. 7, just beneath his clamp, which stitch can be removed along with basting stitch No. 4. If this extra precaution is taken, these two additional basting threads would be represented in figs. 2 and 3 as sutures No. 1 and 2.

Because of the fact that the mucosa slips out from under the crushing clamp there is little danger, if any, of infection from passing a thread thru the ribbon. There is, however, more danger, theoretically, in passing the additional basting threads 1 and 2 outside of the crush. Gatch has shown that this danger is not very great.

It is a good point to have the basting threads of white material as a contrast to the black silk or linen ordinarily used. It is also to be borne in mind that, if the crushed ribbons seem too wide, they can be burnt away with the cautery down to the basting threads. Walker pointed out an advantage in using a continuous stitch in an end-to-end anastomosis, in that it tends to prohibit overdistention of the bowel at the suture line.

CONCLUSIONS

1. This is a simple, aseptic method of anastomic suture in which the openings are all closed by basting threads, which, after the anastomosis has been completed, are withdrawn.

2. Applicable to large or small intestine in almost any type of union or any location.

I desire to express here by sincere gratitude to Dr. Brien King of this city for his ever willing assistance with this operation on the cadaver and live animal; also to thank Dr. G. H. Yates, veterinary surgeon, and Mr. Ed. Crooks, of Frye and Co., for many courtesies.

The Eagleson Clinic.

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EDITORIAL

FUNCTIONAL KIDNEY INSUFFICIENCY

The recent work of Dr. Gustav Baar[1], at the Wenckebach Clinic in Vienna, is a long step in the right direction toward developing a test of kidney function in renal diseases that shows early changes and will not give relatively normal results for a long period after clinical manifestations are present. His contention that indican values over 0.16 mg. per 100 c.c. of blood serum are definite evidences of renal insufficiency in the absence of certain severe gastrointestinal diseases, pernicious anemia and cachexia, come as a bright light of promise in the maze of functional tests now practiced. The phenolsulphonphthalein test of Rowntree and Geraghty has the disadvantage of testing the function of the kidney to excrete a substance foreign to its normal physiology. It has greater relative value in urologic practice in differentiating the functional capabilities of the two kidneys than it has in internal medicine.

The potassium iodide test of twelve or thirteen years ago, as used in Germany, never acquired popularity in this country. Recently Linder[2] has devised a new application of this principle which may be of great clinical value, as it does not necessarily require hospital residence to carry out. The galactose test never gained recognition, probably because of its intravenous application. Sodium chloride excretion, as used in various tests, is perhaps of those so far mentioned the best, as it utilizes a normal body constituent for determination. Its characteristic application is that of Mosenthal[3] tho it is used by others. He also estimates the ability of the kidney to excrete nitrogen, to concentrate the urine, and investigates its nocturnal functional qualities. The water test of Volhard and Fahr[4] is dependent upon similar underlying principles, as is also the concentration test of these authors. Neither of these tests may be applied in impending edema, because the quantity of water used at the beginning of the test may precipitate a general anasarca. Fixation of specific gravity, "isosthenuria or hyposthenuria," is of considerable corroborative value but occurs only when other evidence of equal or greater value may be adduced. The same is true of nocturnal polyuria; furthermore, both occur only in certain types of nephritis.

The more recent methods of determining the various nitrogen bodies in the blood are thus far the best methods of determining certain renal insufficiencies. Yet the technic, in spite of the admirable simplification of Folin and Wu[5], is a complicated one, and requires continual practice for accuracy, hence is limited to clinical laboratories. Furthermore, there is so much diversity of opinion as to what constitutes a normal value that interpretation is not yet uniform. Monokow's urea feeding tests are but little practiced in this country. For no well defined reason it probably has not worked out sufficiently accurately, or, what is more likely, it does not distinguish nephritis from passive congestion of the kidney. Ambard's coefficient requires too much clinical, laboratory and mathematical effort to be attractive; nevertheless, there is much literature favoring its application. It has fallen into quite complete disuse. The announcement of an accurate test of function, relatively easily carried out, with few limitations, will be welcome news to clinicians. If Dr. Baar's comparison of the work of Haas, Rosenberg and that of Van Bommel van Vloten will receive further, especially American, verification, we shall then have an ideal test of renal sufficiency.

F. E.

GROUP PRACTICE

An anonymous communication has been received from a Tacoma physician, dealing with group practice of medicine, the publication of which is requested by the writer, altho at the same time he truthfully surmises that it will probably not be published, since the author's name is withheld. The reasons for concealing his identity is the fear that, if it were known, the subsequent discussion might entail unpleasant personalities among his confreres. It seems self evident that, if one holds definite opinions on a given subject of such value as to warrant their publication, he should exhibit a sufficiently rigid spinal column openly to maintain and defend his position. This writer believes this subject is so vital to the welfare of the profession that it should be subjected to free discussion, as it has not been dealt with in the past.

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[1] Book Reviews p. 38.
[2] Quart. Jour. Med., April, 1922, p. 327.
[3] Arch. of Int. Med., 1915, XVI., 733.
[4] Die Brightsche Krankheit.
[5] Jour. Biol. Chemistry, 1919, XXXVIII, 81.

On the presumption that this matter may be of sufficient interest to our readers to develop a discussion which may be of value, we present a brief summary of some of the writer's arguments. If the question is to be discussed, however, it will be essential that communications bear the authors' signatures, if their publication is desired. At the outset our correspondent reviews some of the arguments in favor of the group form of practice, such as have been published of late in lay magazines. He considers these arguments are not valid, that the patient does not receive superior diagnostic or therapeutic attention, nor at a less cost to himself. Any properly educated physician is able by his own efforts to properly diagnose and treat the vast majority of patients who consult him. Available laboratory diagnosis, supplemented by the indicated specialist, will supply additional needed assistance. The "needless diagnostic fussing" which is routinely administered by the group he considers ludicrous and superfluous. Furthermore, its alleged necessity is a reflection on the qualifications of the average practitioner, as well as the modern medical school which produces him. He thinks the average patient resents this grist mill procedure and desires a medical attendant who has the wits to discover his ailment in a reasonable length of time and give him treatment. Failure to obtain the latter form of treatment is partly responsible for the popularity of the modern cults with their snap diagnoses and ready manipulative therapeutic procedures. The principle of fee splitting is anathema to the ethical physician and he solemnly promises to abstain from it. The group form of practice is a camouflage to enable the rigid advocate of ethics to split a fee without entailing the opprobrium of his fellows.

These are a few of the numerous allegations relative to group practice which the anonymous writer skillfully maintains. His contribution would furnish interesting reading, if presented in full. It would likely produce spirited controversy. This abstract is offered to our readers. If it is of sufficient interest to elicit discussion, we shall be pleased to devote some space to its consideration, under conditions already stated.

THE ABRAMS CULT

The latest venture in medical cultism is that which has recently been exploited on the long suffering public by Abrams, of San Francisco. As has occurred so often in the past, its vogue has been popularized by publicity from a layman who has deluded himself with the notion that he is an authority on medical problems, of which he knows little. One defect of this cult is the absence of a descriptive designation. We propose to supply this deficiency. It is customary for a method of practice to be named on the basis of the principle which it claims to enunciate. Abrams diagnoses and treats all diseases on the principle of oscillation. The root of this word appears in much of his grotesque terminology. Why will not the word "oscillopractic" (accent on the preantepenult) fill the bill? As is the case with its analogue, chiropractic, the term can be used interchangeably for the practice and the practitioner. Both are alike in employing a one-track diagnostic method, all diseases being recognized by the same procedure. Likewise, they exhibit a one-track therapeusis, all diseases being treated by the same method. The oscillopractic goes his chiropractic brother one better, however, in some respects. While the latter needs to use his brain to a certain extent, the former can put his thought cells to sleep and let the machine make his diagnosis. When this is obtained the patient is thrown into the hopper, as it were, of the second machine, the gauge is set, the button pressed and the patient is oscilloclasted, while the oscillopractic prepares the next candidate for the process.

The majority of Abrams' devotees are recruited from the shadowy fringe of the medical profession. But it seems incredible that an experienced, educated physician, who has hitherto practiced reputable medicine, could throw to the winds his knowledge of pathology and bacteriology and blithely proclaim tuberculosis and syphilis to be the same disease, because, forsooth, the machine says these two diseases have the same rate of electronic vibration, and the machine cannot lie. The tragedy of this whole venture is exhibited in the blasted hopes and expectations of the deluded victim who might have been relieved by early rational treatment, but has trusted his future existence to the confident assurances of cure on the part of the Abrams disciple. It would be superfluous to enter in detail into the monstrous absurdities and fantastic impossibilities claimed by Abrams and his followers. We venture this one question, however. Would there exist any of his enthusiastic proponents who proclaim this a great revolutionary discovery in medicine, if the liberal fees were eliminated which are collected for the processes of diagnosis and treatment?

AN UNJUSTIFIED VERDICT

On November 29 there began in Kalama, Wash., a malpractice suit against Dr. C. J. Hoffman, of Woodland, which continued for several days, at the end of which time the jury rendered a verdict of five thousand four hundred dollars against the defendant. The story of this trial is of sufficient interest and importance to warrant its recording in these columns.

Over three years ago a farmer living near Woodland was bitten by a hog. He sustained several tooth cuts above and external to the left knee. Dr. Hoffman was called and after a careful examination decided that in all probability the synovial sac had not been penetrated. He warned the injured man that it was impossible to be certain on this point and advocated a waiting policy. He carefully cauterized the injuries with carbolic acid, applied a suitable dressing and left other dressings with instructions for their use and that he was to be kept informed at frequent intervals as to the progress of the case. Several days later he again saw the patient and there were no signs of infection. At the end of eight or nine days the patient became feverish, the knee joint swelled and Dr. Hoffman caused him to be removed to a hospital in Vancouver, where in consultation and association with another surgeon the wound was opened and a quantity of pus drained. As a result of the septic infection the patient now has a fibrous ankylosis of the knee joint and toedrop and anesthesia of almost all of the leg below the knee.

Many months passed and the injured man took his troubles to an osteopath in Vancouver who told him that Dr. Hoffman had cut the main "leader" in the leg which accounted for the toedrop. At the trial this man tesified against Dr. Hoffman and demonstrated what he thought the injury to be. As a matter of fact, the injury was above and external to the knee and anterior to the biceps tendon. There is in that neighborhood no leader, tendon, ligament or other structure which, thru being cut, could produce toedrop. The ankylosis was, of course, due to the infection of the joint. The toedrop and anesthesia were only explainable on the ground that there was involvement of the nerve supply. The distribution of the anesthesia indicated involvement of the external popliteal nerve which is in the vicinity of the original wound, and the long saphenous nerve which lies at least five or six inches across the leg from the site of the original injury and the surgical incision made later by Dr. Hoffman. Neither nerve had been severed and the best explanation of the trouble was that it was due to neuritis from infection.

The alleged expert, who demonstrated the nature of the injury for the plantiff, gave an exhibition of lack of knowledge such as has rarely been witnessed in any courtroom; yet, notwithstanding this lack of any reasonable evidence on which to base suit, on the opinion of one person, whose incompetency was so clearly demonstrated in the courtroom, Dr. Hoffman was subjected to a suit which necessitated his appearance in court for nearly a week, required the presence of a half dozen other physicians and surgeons for several days, consumed the time of the judge and jury for a similar period and resulted in a verdict which seems to be without excuse.

The case will, of course, be appealed to the higher court and there is good reason to assume that the decision will be reversed. Meanwhile, it serves to illustrate that the practice of medicine and surgery of the most conscientious physician is not without considerable danger to him. In attending infectious cases he risks his life. In attending surgical injuries he is liable to be sued and mulcted out of by no means small sums of money.

PUBLIC HEALTH LEAGUE AND HOSPITAL STANDARDIZATION DEPARTMENTS

It is the purpose of this journal to support and promote the interests of all enterprises that will benefit the medical profession and the public of the states it represents. The two movements indicated by the above title are distinctly in this class. In order that their progress may be visualized and our readers posted as to the work in which they are respectively engaged we shall establish Departments of Public Health Leagues and of Hospital Standardization. The interests of both will be presented in a similar manner. The following announcement explains the plans and purposes of the latter.

Thru the trustees of Northwest Medicine the Department of Hospital Standardization has been created for the purpose of discussing its problems. Perhaps no other movement that has been developed within the medical profession in the past generation has brought so much good to itself and the public at large, and especially to the managements of hospitals. Every physician who has occasion to treat patients in a standardized hospital must have observed the changed conditions in it. That a still greater improvement can be obtained is unquestioned, if we will all work together along definite lines.

At the present time there is no medium thru which standardization may reach all of the profession at the same time. A problem that arises in Seattle is probably identical with that in Portland or Spokane and yet the solutions of the three might result in three different results, whereas, if problems of this sort could be aired in a publication when they arise in different localities, the physicians in one locality would know what solution had been arrived at in another and thus gradually a universal method of handling them would develop. Again, each community has developed some system or plan which has been found to be workable and the results of which have been for the benefit of the profession, hospital and the public. There should be a place for these plans to be made public, so that other communities can adopt them as occasion may arise. Various improvements have been made from time to time thru suggestions of the medical profession to the managements of the various hospitals. When a hospital has adopted them and the profession is pleased with the results obtained a member of the staff could report the improvement to this department for publication. In this way valuable information can be obtained and disseminated. In brief, this is to be the scope of this department, a development in the problems of hospital standardization.

The great majority of the medical profession are supporting the movement, but we cannot overlook the fact that there is a certain percentage of physicians in every community who so far have not become convinced of its importance. They look upon the case histories as more or less a nuisance; they criticize the technic that has been adopted in the operating rooms; they question the advisability of too much routine laboratory work and, as for consultations at the request of the hospital, many feel that this is entirely unjustified. These physicians are a part of our profession. They have an absolute right to their opinions and, if they are right and the majority wrong, then they should make this understood clearly so that we may profit by a better study of this problem. These columns will be open, therefore, to criticism, constructive or destructive, but the editors will reserve the right to publish any letters addressed to them, if by so doing a point may be made for the advancement of this movement. If so desired, the signers' names may be omitted in the publication of letters.

It is to be hoped that the next issue will begin this discussion. If you have objections, write about them; if your hospital has some special plan which has been successful in its standardization, send a report; if you have any problems that are worrying the staff and you wish cooperation in solving them, address a letter to this department. Address all communications to Hospital Standardization Department, Northwest Medicine, Seattle, Wash.

THE OREGON LEGISLATIVE SESSION

The physicians of Oregon apparently participated to a very slight extent as contestants for legislative office in the recent elections. Dr. Joseph C. Smith, of Josephine County, holdover who has served several terms, is the only physician in the legislature, who will have to bear the burden of legislative matters for his colleagues. According to a recent publication of the League for the Conservation of Public Health, the chiropractors will seek to obtain greater privileges, being encouraged by the passage of their initiative measure in California. The state association of naturopaths will seek to secure an examining board and recognition of their methods of practice. The antivaccinationists will again attempt the passage of their vaccination prohibitive measure, sponsored by christian scientists and other drugless cults.

There is apparently a widespread feeling among physicians that the cultists are growing more active and are proving a greater menace to public welfare. No effort that can successfully offset their activities will be wasted. Every physician owes it to his profession and his patients to do all that he reasonably can to combat these little trained incompetents. It is unjust that a medical man should be required to spend from seven to ten years, after leaving high school, in equipping himself to care for the sick and to submit to most difficult examinations, while chiropractors, naturopaths, masseurs and others who have had little or no training, most of whom did not even complete the common school course, are permitted to usurp functions which rightly belong to trained medical men who have spent so many years in perparation for their duties. It devolves upon every physician to use his influence with members of the legislature who are among his friends and acquaintances to prevent the passage of such measures as this letter from the league indicates will probably be introduced in the legislature.

PACIFIC NORTHWEST MEDICAL ASSOCIATION MEETING

This is to remind our readers of the second meeting of this association which is to be held in Seattle June 19-21. Preparations are being made to present a program even better, if that be possible, than that of last year's meeting at Spokane. Already a large number of men have promised to be present and read papers, whose names are household words to every physician of the country. Next month the program will be published so far as it has been perfected to that date. It is expected that the profession of the Pacific Northwest will make plans to attend this meeting, and all are assured that a feast of good things will be offered which no one can afford to miss.

MEDICAL NOTES

OREGON

Doctor Declared a Fraud. Considerable interest has been aroused in Portland papers by the publicity given "Dr." E. J. Lenehan, who claimed to be a graduate of Yale and "Middlesex Medical School." He was arrested for stealing an automobile, claiming that he did this for the purpose of receiving a penitentiary sentence so that he could study the pathology and mental side of crime. The judge accommodated him in this respect. The president of the Portland Yale Alumni Association interviewed the man and declared him to be an imposter. Altho he claimed to have attended Yale for three years, it required but a few moments to demonstrate his ignorance of ordinary facts concerning that university, its faculty and courses of study.

Portrait of First President. A portrait of Dr. A. S. Josephi, first president of the Portland City and County Medical Society, was presented to the medical department of the University of Oregon, at a dinner on the evening of Dec. 20. The donor was Dr. J. G. Strohm, president of the society, and is the work of a Portland artist. Dr. Josephi was president of the society during the year of its formation in 1884. Most of the presidents of the society for a period of thirty-eight years are in practice in the city and attended this dinner in his honor.

Portland City and County Medical Society held its annual meeting December 20. The following officers were elected for the ensuing year: President, Dr. George Parrish; vice-president, Dr. C. S. White; secretary, Dr. H. C. Bean; treasurer, Dr. Kittie Plummer. Addresses were delivered by Dr. S. E. Josephi, recalling events of forty-five years of practice; Dr. E. A. Pierce, on "Our Living Ex-Presidents," and Dr. A. C. Smith on "The Presidents Who Have Gone Before."

Central Willamette Valley Medical Society held its annual meeting at Eugene, Dec. 7. The society is composed of physicians in Benton, Lane, Linn and Lincoln Counties. The officers rotate among the members of the different counties. During the coming year all the officers will be from Linn county. They are as follows: President, Dr. W. H. Davis, Albany; vice-president, Dr. W. L. Wood, Lebanon; secretary-treasurer, J. Beauchamp, Albany; censor, Dr. D. G. Clark, Harrisburg. A program was presented of a medical lecture with moving pictures.

Suit Discontinued. A malpractice suit for $11,500 was last month brought against Dr. E. A. Sommers of Portland, for the improper setting of the bone of a foot, following dislocation. After considering the testimony the judge took the case from the jury on the ground that there was insufficient testimony to warrant its trial.

The Astoria Fire. The extensive and destructive fire at Astoria last month brought calamity to a large number of physicians of that city.

Many lost their office equipment, together with other valuable possessions. The sympathy of the profession is extended to the Astoria brethren for the misfortunes which have come upon them.

Octogenerian in Practice. Dr. O. M. Dodson, of Baker City, has recently celebrated his eightieth birthday. He has practiced in that city for forty years and is still at it. His health is good and he says, "I am still going strong and expect to continue for some time to come."

Chairman of Board. Dr. J. E. Schearer, of Tillamook, was last month appointed chairman of the State Hospitalization Board, for disabled service men. Tillamook County has been placed in the first district for administrative purposes of the American Legion.

Elected Commander of Post. Dr. Eugene W. Rockey was last month elected commander of Portland Post, No. 1, American Legion, by a practically unanimous vote. The doctor is also chef de gare of Portland Voiture oN. 25, La Societe des 40 Hommes et 8 Chevaux.

Dr. H. Oftedal, recently of Portland, has located for practice in Jacksonville. For many years he practiced in North Dakota.

Dr. Ray Logan, of Chicago, has located for practice at Seaside.

Drs. V. L. Hamilton, of Coquille, and **C. W. Hamilton,** of Baker, located for practice last month at The Dalles.

WASHINGTON

Newly Organized Hospital. The Norwegian Hospital Association of Seattle has taken over the Lakeside Hospital and will operate it under the name of The Norwegian Hospital. This institution accommodates sixty patients. It is the purpose of the organization later to build an up-to-date hospital on this site.

Hospital to be Remodeled. The Skamania Hospital, at Stevenson, has been purchased by Dr. John R. Barber, recently of Portland. It will be remodeled and accommodations provided for an increased number of patients.

Hospital Under Construction. A twelve-room hospital is being built at Omak under the supervision of Dr. L. S. Dewey. The building is 28 by 50 feet, with basement. It is constructed in cottage style and is furnished with modern hospital equipment.

Hospital Reconstructed. The Kelso Hospital, under the supervision of Dr. E. C. Hackett, has been reconstructed and enlarged. It is three stories in height, 50 by 70 feet. It consists of wards and private rooms with accommodations for seventy beds. It is equipped with modern hospital appliances.

Pierce County Medical Society held its annual meeting at Tacoma Dec. 12. The following officers were elected for the ensuing year: President, J. P. Kane; vice-president, C. F. Engles; secretary-treasurer, W. P. Penny; trustees, H. G. Willard and E. F. Dodds; delegate to the state association, R. A. Remington; alternate, H. J. Hards.

The North Pacific Surgical Association held its annual meeting at Tacoma last month and elected the following officers for the ensuing year: President, J. B. Eagleson, Seattle; vice-president, H. M. Robinson, Victoria; second vice-president, H. B. Huhn, Spokane; councillors, J. B. McNerthney, Tacoma, and E. W. Rockey, Portland; trustee, C. W. Sharples, Seattle, secretary-treasurer, A. W. Baird, Portland. The next meeting will be held in Seattle.

Elected Commander. Dr. H. D. Jonez, of Tacoma, was last month unanimously elected commander of Edward V. Rhodes Post, American Legion.

Appointed Lt.-Col. Dr. H. V. Wurdemann, of Seattle, has been appointed Lt.-Col., Medical Officers Reserve Corps, U.S.A.

Elected President. Dr. F. J. Cullen, of Puyallup, was last month elected president of the Kiwanis Club of that city.

Dr. O. L. Adams, formerly of Davenport, has located for practice at Hoquiam.

Dr. Clyde Macgill, formerly of Wichita, Kan., has located for practice in Tacoma.

Dr. J. A. Darby, formerly of Astoria, Ore., located for practice in Kelso.

Medical Wedding. Dr. E. J. Barnett, of Spokane, was married to Miss Agnes O'Neil of that city, Nov. 21.

IDAHO

Inland Empire Medical Association held its annual meeting at Lewiston, Dec. 12. Forty physicians were in attendance, the number being limited on account of snow obstructing the highway. Clinics at the city hospital were conducted by Drs. Braddock, Alley, Johnson, Shaff and Rose, of Lewiston. Addresses were delivered by Drs. G. H. Anderson, of Spokane, C. U. Moore, of Portland, J. Tate Mason, of Seattle, J. E. Else, of Portland, A. A. T. Cunningham, of Spokane.

Pocatello Medical Society last month held its annual banquet at Pocatello, attended by a full membership of the society. The program consisted of music and addresses by Drs. F. M. Roy, T. F. Mullen and F. M. Sprague.

South Central Medical Society held its annual meeting at Burley, Dec. 12, twenty-five members being present. Dr. Stewart, of Boise, read a paper on osteomyelitis and interesting addresses were made by other physicians.

Appointed City Physician. Dr. C. O. Moore, of Pocatello, was recently appointed city physician by the mayor.

Dr. G. Gist, who has practiced for some time at Lewiston, has located for practice at Winchester. He formerly practiced at Nez Perce.

Dr. M. H. Tallman, of Boise, has gone on an extended trip with his family thru the South West Indies and Mexico.

OBITUARIES

Dr. Henry Hart, of Medford, Ore., died Dec. 4, following an emergency operation for appendicitis of which he had suffered several attacks. He was 59 years of age, born at West Point, Ill. He was graduated from Shattuck College, school of medicine at Quincy, Ill., and later studied at the University of Chicago. He practiced for twenty-one years at Quincy in association with his father and brother. He located at Medford in 1909. Besides practicing medicine he was interested in orchard development and was prominent in banking.

Dr. Leon G. Holland, of Elmira, Ore., died at Eugene, Nov. 19, following a stroke of apoplexy. He was 46 years of age. He graduated from Willamette Medical School in 1906. He served in the Spanish American war and was twice wounded, suffering the loss of the use of one of his arms.

Dr. Charles H. Newth, of Philomath, Ore., died Nov. 29, after an illness of two days. He practiced in that city twenty-five years. He was widely known and highly esteemed in a large section of the country adjacent to Philomath.

Dr. Ki Lane Miller, of Roseberg, Ore., died Nov. 28, following cerebral hemorrhage. He was born in Utica, N.Y., in 1854. He graduated from University of Chicago and later from Hahnemann Medical College of that city. He first located for practice in Portland and in 1883 moved to Winchester to take charge of a lumber company hospital. During the World War he served in the medical corps of the army.

Dr. R. J. Marsh, of Portland, Ore., died Dec. 18, following a year's illness. He was 53 years of age and in practice in Portland for twenty years. He graduated from the Medical Department of University of Pennsylvania. On first going to Portland he served as interne at the Good Samaritan Hospital, afterwards entering private practice

Dr. H. H. Rust, of Gig Harbor, Wash., died Dec. 14, after a brief illness. He was 86 years of age and had lived in this vicinity for a third o fa century. He was a Civil War veteran, an artist and an author. He published a book, "The Model Town." At the time of his death he was preparing a history of Gig Harbor and vicinity.

Dr. Lee A. Scace, of Centralia, Wn., died at Hot Lake, Ore., Nov. 21, from disease of the heart, after two days illness. He was on the way East for postgraduate study. He was born at Pringuar, Ia. After graduating from Warren Academy, Ia., he obtained his medical degree at University of Minneapolis, in 1907. He spent two years at St. Barnabas Hospital, Minneapolis, and, in 1909 became assistant at N.P. Hospital, Tacoma. In 1910 he located at Wallville, Wash., going to Centralia in 1912. He had a practice extending over a large territory. In 1920 he built a modern hospital in that city.

Dr. John J. Darby died at the Marine Hospital, Port Townsend, Wash., Dec. 15, following a week's illness with chronic appendicitis. He was 32 years of age. He formerly lived at La Grande, Ore. During the war he served in the U.S. navy, following which he entered the U.S. Public Health Service. He had been stationed at Port Townsend for the last two months.

CORRESPONDENCE

SOCIALIZATION OF MEDICINE IN NORWAY

Christiana, Norway, November, 1922.

To the Editor:

Christiania, the capital of Norway, is a town about the size of Seattle, but gives one a more cosmopolitan impression. It is, of course, as most European towns, much older, founded about 1620 by the Danish King Christian IV. A statue of him standing in the largest square.

It is with rather peculiar feelings I see this, my old home-town again, the old University and hospitals, after nearly fifteen years absence. Things are not the same. There are new improvements, great progress everywhere, effects, I am sure, due as also many other things, to the great war. Altho not directly implicated, Norway was so near the theater of action that great, lasting changes were brought about.

The medical profession here is of very high standing, scientifically and socially, and to a great extent very prosperous. During the war and the years after there was an underproduction of medical men. The consequence was that practically every doctor had all he could do and a little more. Several years ago it was so bad that the one and only university they have was unable to produce enough medicos and they were obliged to give "licentia practicandi" to a number of men with foreign degrees, as from Denmark, Sweden and Germany. The pendulum has, however, now swung the other way. In the last few years there has been a gradually larger and larger increase in medical students, the last year's graduation amounting to nearly one hundred. Registrations this year for new medical students was over five hundred. It will, therefore, not be so very long before they will have a real medical proletariat with most of the men on a starvation income.

Socialization of medical practise is here on a far developed stage. That is, if you can call it so, the way it is practised. Norway is very closely situated to soviet Russia, and the bolshevik influence strongly felt everywhere. In the Congress or Storthing as it is called, the socialistic or radical faction is very strong, and to a certain extent influenced directly by the leading Russian bolsheviki. This faction has from time to time been able to carry thru laws, tending to socialization of the whole people. Among other things they have a state medical insurance bill, a resident insurance law, an insurance or pension law for old age is pending and very likely to pass. Not many years ago there was passed an unemployment law, whereby everybody out of work, belonging to some labor organization, gets a large percentage of his wages during his time of unemployment, paid by the government.

Due to this and many other similar influences Norway is now, probably next to Switzerland, the most expensive country in the world to live in. Wages are high and living expenses three to five times what they were before the war. In a corresponding degree taxes of all kinds have increased enormously, the income in some instances amounting to 25 per cent.

As mentioned before, they have two different medical insurance acts; one an accident act, which provides for accidental injury and works somewhat similar to ours, the other, which is of considerable more far-reaching consequence, providing for insurance in case of sickness, and that means sickness of all kinds from colds to child birth. Every man or woman over fifteen years of age, working in the employ of others, especially the laborers, skilled or unskilled, but also office people, clerks, public servicemen, in short everyone whose income does not exceed 6000 krones a year (corresponding to an income of about $2500 in America), comes under this insurance act.

Out of this, and closely connected with it, has developed the so-called "Kredssygekasser," corresponding somewhat to the different sick benefit societies with us, only that they here are under government control and initiative. There is usually one society in each town, or in the country in each district, all connected and directed in common from a central organization, located in Christiania. Each society then makes its contracts with the different doctors, who want to work for its members, and practically all do. A list of the physicians, to whom the members can go, is published and they can then make their own choice. There is also provision for specialists and consultants, all to a definitely fixed fee schedule.

The expenses are paid out of the common fund, which is derived from four sources: (1) The employer pays one-tenth; (2) The Government one-tenth; (3) The local city or county government two-tenths; (4) And the insured person six-tenths in the form of an insurance premium, ranging in six different classes according to his income and the kind of work he is employed in. According to the classes, this premium amounts to from 50 öre to 110 ore (about 10 to 25 cents) a week.

For this the insured gets free physician for all kinds of sickness and with free choice of practically all the medical men in his community, together with specialist help and consultations, if needed. He furthermore gets free hospital and while there free medicine and dressings. In ambulatory cases he has to pay his own medicine. In confinement cases the mother gets free delivery, hospital and eight weeks' maternity money, while an ordinary case gets sick money, amounting to approximately 60 per cent of wages for the full time of his sickness.

This law has been in effect for the last five or six years, with some modifications off and on as time and changed conditions have demanded them. It has worked well and been a blessing to the great mass of people, whose income is small and who usually have nothing when sickness comes and doctor is needed. Also the physicians have been satisfied on the whole. Their contracts and fee schedule are very good, thanks to the medical association, one of the strongest organizations in the country, which has done much for the welfare of its members. It fixes schedules, approves contracts and many times rather than give in has boycotted whole districts for medical service.

This system has naturally to a great extent minimized the private practice of many men, but in return a good many doctors with large practice of this kind are making a very good living, many as much as 40,000 to 50,000 krones, the average being 15,000 to 20,000 a year. Besides this the money is always certain, being paid directly from the different societies at stated intervals.

At the time of this writing, however, there is a very bitter fight on between the societies and the medical association. The contracts are up in November, and a very much reduced schedule is prepared, a reduction which is sharply fought by the medical men. A bitter polemic is going on in the daily press, where the different views are freely and unmercifully aired. Knowing the medical men and their association as I do, I have no doubt about the outcome.

Torlief Torland.
(Seattle)

HUMAN ACTINOMYCOSIS

Rochester, Minn., Dec. 7, 1922.

To the Editor:

I am endeavoring to make a complete study of the distribution of human actinomycosis in this country. The number of cases reported in the literature is surprisingly small, and I know that the disease is not so rare as is sometimes thought. I shall greatly appreciate hearing directly from any one who has had experience with this disease, and desire to know concerning case histories the following: age, sex, occupation, residence, state in which the disease was contracted, location of lesion, duration of symptoms, and any special points of interest connected with the treatment, outcome of the disease, or necropsy findings.

A. H. Sanford, M.D.

Mayo Clinic.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Pulmonary Tuberculosis. By Maurice Fishberg, M.D., Clinical Professor of Medicine, University and Bellevue Hospital Medical College, etc., etc. Third edition, revised and enlarged. 891 pp. $8.50. 129 engravings, 28 plates. Lea & Febiger, Philadelphia and New York. 1922.

The reviewer has been an enthusiastic admirer of Fishberg's earlier book on tuberculosis and holds the same opinion about the latest edition. We stated that the treatise "is the most scientific, practical, comprehensive and up-to date book on tuberculosis," and we are pleased to see that the British Medical Journal declares that "It is by far the best work on the subject, with which we are acquainted, in any language."

Two new chapters are especially notable, altho the entire book has been reset and 147 pages added. One of the chapters on reciprocal relations of tuberculosis to other lesions and disorders is of great practical value. For instance, the excessive sexual potency and demands of the tuberculous. Only recently a male tuberculous subject came to the reviewer because his sexual desire was so overpowering that he had attempted intercourse with his own mother and feared his sanity.

The relations of tuberculosis to other diseases, as asthma, bronchitis, pneumonia, influenza, heart disease, and syphilis and extrapulmonary forms of tuberculosis are discussed. Fishberg believes that the combination of tertiary syphilis and pulmonary tuberculosis is rather a happy one, in that the prognosis of the pulmonary lesion is very good with antisyphilitic treatment. He also states that the presence of a high blood pressure with phthisis usually means an associated cardiac, gouty, renal or luetic disease.

Fishberg finds the occurrence of certain diseases inimical to the incidence or progress of phthisis, as rheumatism, gout, stone in the kidney or gallbladder. The condition of hyperthyroidism is unfavorable to the development of pulmonary tuberculosis the author affirms, while a hypothyroid state favors its development. The other new chapter is on medicolegal and insurance aspects of tuberculosis. This is a very practically valuable chapter, particularly the diagnosis of tuberculosis in insurance examinations. To our previous opinion of the book we can only add that it is better than ever in this, the latest edition. WINSLOW.

Die Indicanemie, Ihre Bedeutung Als Nierenfunktionsprobe. By Gustav Baar, M.D., F.A.C.P., Portland, Ore. Pp. 148. Urban and Schwarzenberg, Berlin and Vienna.

This monograph is one well meriting the study of American students of problems of kidney insufficiency. American literature was deprived of the work of Haas and the similar, tho differently interpreted, studies of Rosenberg by reason of the exclusion of German literature during the war. Baar has given a splendid analytical review of their work and has presented a reconciliation of their differences. His studies on 97 patients, 22 of whom were autopsied, have led him to conclude that hyperindicanemia, or more simply indicanemia, may be utilized to differentiate the kidney of simple passive congestion from a nephritic kidney with passive congestion, that the estimation of blood nitrogen bodies are of infinitely less value than indican determinations. Persistent indicanemia is always evidence of irreparable kidney injury (in the absence of certain severe metabolic disorders), while the various nitrogen bodies may long continue to show normal values. Finally, he has apparently demonstrated that a metabolic indicanemia may occur in the protein disintegration of pernicious anemia and cachexiae as well as in those of severe intestinal diseases and sepses.

The test is by no means so clearly worked out as to make the tests for indicanemia routine laboratory measures. But if Dr. Baar's claims can be verified they soon will be. On the whole the work has been painstaking, thoughtful and is doubtless in large part correct. There are, however, certain discrepancies that should be cleared up by Dr. Baar or checked up by other workers. EPPLEN.

Textbook on Minor Surgery. By John C. Vaughan, M.D., Director and Visiting Surgeon Beekman Street Hospital; Visiting Surgeon Sing Sing Prison Hospital, etc., and Athel Campbell Burnham, M.D., Colonel in United States Army, etc. 627 pp. Illustrated with 459 engravings. $7.75. Lea & Febiger, Philadelphia and New York. 1922.

A good book on the better methods in minor surgery is in many ways of greater value than a similar book on major surgery, as the correct treatment of so-called minor conditions frequently obviates much and prolonged morbidity. Much major surgery has been avoided by proper attention to the minor injury.

The Industrial Clinic and Workman's Compensation Insurance have served to impress on us the importance of this branch of surgery, and the increased use of the many forms of local anesthesia have greatly extended its field. The present work by Vaughan and Burnham is excellent in that it is so freely descriptive in the text and so abundantly and elegantly illustrated by cuts and diagrams. Its treatment of a wide range of subjects is handled in a thoro manner and all methods are explicitly described. FORBES.

The Treatment of Fractures. With Notes Upon a Few Common Dislocations. By Charles Locke Scudder, M.D., Consulting Surgeon, Massachusetts General Hospital, etc. Ninth edition, revised. 749 pp. 1252 illustrations. $8.50. W. B. Saunders Co., Philadelphia and London. 1922.

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tures. Many new splints and appliances have been added for assisting reduction and maintaining the proper position of the fractured limb.

Fractures of each bone are discussed and several methods of treatment of each are suggested. The aftercare in the treatment of fractures is considered, especially the use of ambulatory splints. There is a very interesting chapter on the more common dislocations. BUCKNER.

Diseases of the Skin. By Henry H. Hazen, A.B., M.D., Professor of Dermatology in the Medical Department of Georgetown University and Harvard University, etc. Second edition. 241 illustrations including two-color plates. 608 pp. $7.50. C. V. Mosby Co., St. Louis. 1922.

The new matter in this edition is well chosen and the illustrations are good. The chapter on diagnosis contains an ingenious and helpful key to diagnosis in cutaneous lesions on the order of similar keys for the recognition of specimens in botany and zoology. A valuable feature of the work is the inclusion of a goodly number of photomicrographs, illustrating the histopathology of many of the commoner lesions. Another feature that recommends it is the fact that the references are almost wholly to English language texts, largely of American authors. Thus, while the bibliography is not extensive, it leads to matter easily available in most cases. It is a work suited especially to the student and general practitioner, and should have a wide vogue.

CRABTREE.

The Surgical Clinics of North America. April (San Francisco Number), Vol. II., No. 2; June (Chicago Number), Vol. II., No. 3; October (Southern Number, Vol. II., No. 5. W. B. Saunders Co., Philadelphia and London. 1922. $12 per annum.

The San Francisco number is excellent, easily the peer of the numbers which have previously emanated from Eastern centres. Woolsey demonstrates a very interesting case of anthrax. Here, as in many instances in surgery, the diagnosis is the main object for the treatment is medical, altho the lesion is external and therefore technically surgical. Actinomycosis is another such lesion and countless other examples could be cited to show that diagnosis is even more important in surgery than in internal medicine. In this connection two other demonstrations are of great value. Ely on chronic arthritis of the knee, in which he gives an interesting differential diagnosis of the common types of arthritis, and Bartlett in his discussion of doubtful breast tumors.

Bartlett brings out many of the points recently emphasized by Bloodgood at the late Spokane meeting, but makes the value greater in applying differential diagnosis to a concrete case in which a "blue dome" cyst was in juxtaposition with a nonencapsulated cystadenoma.

The Southern number contains equally valuable papers by surgeons of several southern cities. There are no more practical and live publications than these clinics. Winslow.

Diseases of Women. By Harry Stugeon Crossen, M.D., F.A.C.S., Clinical Professor of Gynecology, Washington University Medical School, etc. Fifth edition, revised and enlarged. 1005 pp. 943 engravings, including one color plate. -10. C. V. Mosby Co., St. Louis, 1922.

A review of this book is a survey of an encyclopedia of gynecology. This edition is an improvement over the previous which is probably the highest compliment. The increase in pathologic treatise, both in text, illustrations and photomicrographs, is more than satisfactory. The numerous additions include all advances in this subject since the appearance of the previous edition. "Trichonomas vaginalis" will extend the scope of the book geographically and aid in the diagnosis of many obscure cases. Endometrial cysts of the ovary and adenomyoma of the terus, profusely illustrated, give all that is necessary on these subjects. Thruout the book the importance of x-ray and radium is avowed, many conclusions being at variance with those in the other editions, thus showing the trend of the times and the openmindedness of the author.

Malignant disease of every part is considered in the most modern way. Advice in favor of specimen excision for diagnosis of cervical carcinoma will bear much weight, excision of course with the necessary blocking of the lymph spaces by chemical or thermal means. In the light of the research work reported, coupled with the fact that in the clinics of Europe there is practically no diagnosis made from frozen sections, this admonition is timely and just and should remove much of the phobia regarding stimulation of the growth. Nevertheless it requires courage to fly in the face of existing theories and practices.

The chapter on internal secretion has changed but little, which is a distinct relief in view of the fancies which are continually being foisted upon us as facts. This book, complete in scope and detail, gives to the profession a fund of knowledge, clarified, condensed and classified in such manner as to be of inestimable value as a constant companion of anyone who deals with diseases of women. Gordon Thompson.

I Believe in God and in Evolution. By William W. Keen, M.D., Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia, Pa. 100 pp. J. B. Lippincott Co., Philadelphia and London. 1022.

Views expressed by a man of the scientific attainments and professional stand of Dr. Keen can be considered authoritative. He states this little book is published to dispel the fears of some earnest Christian people that science and the scriptures are incompatible. He states, "as a Christian man I find no difficulty whatever in believing absolutely in Evolution and Revelation." The whole book comprises arguments demonstrating a common origin for the animal kingdom, including man. He proves the ascent of man from some lower form of animal life thru a period of perhaps a million years, by comparing the common features in the skeletons, the different organs, the similar nervous systems, identical diseases, influences of emotions and other factors that demonstrate the similarities between man and animals. "To develop great men such as Aristole, Shakespeare, Lincoln and then by death to quench them in utter oblivion would be unworthy of Omnipotence. Man's soul must be immortal." Any person will profit by reading this little volume. Smith.

The Propaganda for Reform in Proprietary Medicines, Vol. 2, 1922. Containing Reports of the Council on Pharmacy and Chemistry and contributions from the A.M.A. Chemical Laboratory and from The Journal of the American Medical Association. Cloth. Price, $2.00. Pp. 603 with illustrations. Chicago: American Medical Association, 1922.

The first volume of this book appeared in 1917 and ran thru nine editions. This one is similar to the former in the subject matter which it treats. In addition it deals with unwarranted therapeutic claims, especially those advanced for animal organ preparations, serums, secretions, etc. It describes the changed conditions in proprietary medicines brought about by the World War. It contains a great deal of information concerning the technic of selling proprietary medicines, particularly in their influence on physicians. This book will be of value on every physician's office table.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah

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ADDRESS

MACKENZIE HALL, OF THE UNIVERSITY OF OREGON MEDICAL SCHOOL*

HON. A. L. MILLS

PORTLAND, ORE.

It is seemly that we come together on this thirteenth day of January to dedicate this building. For what day more fit than the birthday of Dr. Kenneth A. J. Mackenzie, to whose vision, courage and ceaseless efforts in the face of many discouragements, we are indebted in major part for this home of the Medical School of the University of Oregon. An honor that I esteem greatly has come to me today, the honor of being chosen to deliver the address at this dedication of Mackenzie Hall, for Dr. Mackenzie was both my friend and medical adviser. No one valued his friendship more highly or admired more his ability as a physician and surgeon.

In this address I propose to speak briefly of the great advance of medical science within comparatively recent years, to sketch the history of the Medical School, and to tell you what a Class A medical school, properly supported by the state, county and city, means to Portland, Oregon and the Northwest. There are those among us, and their number I fear is not small, who are so engrossed in the selfish pursuit of their own endeavors that they have neither the time nor the inclination to learn of the great benefits that have accrued to mankind in modern times thru the unselfish devotion to their calling of the medical fraternity, and thru the development of the sciences of medicine such as bacteriology, pathology and physiology. But even these citizens who have time for nothing other than "strict attention to their own business" are cognizant of the fact that yellow fever, cholera and smallpox are no longer a menace to our communities; that the mortality from tuberculosis has been cut in half in the United States; and that there is good reason to believe that the mystery of cancer, the cause and cure, will be solved.

The secret of the conquest of medical science over the great plagues that formerly levied a heavy toll on human life, plagues that were considered by the ignorant and pious alike as visitations of an angry deity upon a wicked world, is the story of the devotion of science to the study of the cause of disease, the study of preventive medicine. For, remove the cause of disease, and there remains but little need to study the cure. To ascribe to an all-wise, just and merciful God the crime of sending deadly plagues to destroy His children is a revolting conception of the Creator of all things. It devolved on medical science to show the world that plagues and the "pestilence that walketh in darkness" were the results of ignorance and a failure to understand God's law of health.

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* Address delivered at dedication of Mackenzie Hall, Portland, Ore., Jan. 13, 1923.

Time was, not so very many years ago, indeed in my father's boyhood, and the custom maintained in my childhood, when in the summer time there was a great exodus to the country of the people of New York City, driven there by fear of an outbreak of yellow fever or cholera. An English visitor to New York in 1822, James Hardie, states that "on the 24th of August our city presented the appearance of a town besieged. From daybreak till night one long line of carts, containing boxes, merchandise and effects, was seen moving toward Greenwich Village and the upper part of the city. Carriages and hacks, wagons and horsemen were scouring the streets and filling the roads; persons with anxiety strongly marked on their countenances and with hurried gait were bustling thru the streets. . . . Within a few days the custom house, the post-office, the banks, the insurance offices and the printers of newspapers located themselves in the village or in the upper part of Broadway, where they were free from the impending danger."

And New York was then a city of 130,000 people and, having passed Philadephia in population, prided itself upon being the metropolis of the United States, the centre of wealth, refinement and intelligence. This great city disposed of its garbage and ashes under ordinance by providing that "each householder should, twice a week, from April to December, shovel and sweep the refuse, garbage and ashes to the middle of the street, where it fattened the pigs until it pleased the city officials to remove it." It was estimated there were twenty thousand hogs running loose in the streets of the city, not to mention cows, much to the annoyance of the ladies, altho even then some finicky persons actually objected to a great pigsty which stood on the corner of Broadway and Canal Street.

"There were no sewers but each house had a pit, the very opening of which is enough to breed the plague itself. It had practically no water supply, drinking water coming from numerous wells with pumps in all parts of the city. As for washing water, that fell like manna from heaven. The drippings from the roofs were carefully preserved in cisterns and husbanded with proper frugality, as they served to promote the cleanliness and apparel of the citizens" In the backyard of the house, where I was born and lived twenty-four years, built in about 1856, was a cistern of this kind.

With such health conditions maintaining in New York one hundred years and less ago, how must it have been in the other cities, towns and hamlets of our country? It is a wonder that any survived the pestilence that walketh in darkness.

The study of bacteriology, especially since the epoch making investigations of Koch and Pasteur in the latttet part of the last century, has solved most of the problems connected with these epidemics. But it was not until Major Reed, American military surgeon and bacteriologist, assisted by a devoted band of medical aides, after the close of the Spanish American War, proved that yellow fever was conveyed by a certain variety of mosquito, that the building of the Panama Canal was made possible, and the world freed from the scourge of yellow fever.

I remember as a boy, when no household medicine chest was complete without a bottle of "Sun Cholera Mixture," the best remedy for cholera then known. For epidemics of cholera had swept the United States with greater or less severity since 1832. We scarcely hear of it today, as Koch in 1884 discovered the undoubted cause of the disease to be the comma bacillus and the two most frequent agencies for its distribution to be polluted water and house flies.

It does not take a long memory to recall the time when the report of a case of smallpox in the community blanched the cheek of every resident. Now who gives such report more than passing thought? The other day a man fell to the floor of The First National Bank just outside the officers' rail. Officers and others ran to his aid thinking he had fainted. They bathed his face, rubbed and chafed his hands. When he recovered sufficiently he was sent home. A few days later, on inquiring about his health, one of the officers was told, "He is getting along all right, he'll be out of the hospital soon." "What hospital did he go to?" "The smallpox hospital of course, where else did you suppose?"

And, due to Dr. Edward Jenner's discovery, so little is the fear of smallpox today, that it was considered a good joke on those officers who had aided the victim of smallpox. In a day or two it was a forgotten incident.

Thirty or forty years ago a sufferer from tuberculosis was immured in a superheated room, vigilantly guarded from drafts, and nourished on wine. In 1882 Koch discovered the tubercle bacillus and the entire treatment has been reversed. The mortality in the United States has been reduced materially. The study of bacteriology and pathology have aided greatly but much remains to be accomplished before tuberculosis is as completely conquered as have been yellow fever, smallpox and cholera.

Time forbids any further mention of the great advance of medical science other than in the cases just mentioned. My purpose in citing these well known plagues is to call attention to the economic gain that accrues to us all by the establishment of high class medical schools, amply provided with laboratories. equipment and competent staffs of instructors, where the study of physiology, chemistry, bacteriology and pathology can be prosecuted to the best advantage. Such an one we have here, a Class A school, but its maintenance and its future success depend upon the cooperation and support of all our citizens who have at heart the welfare of the human race.

A generation ago a medical education consisted of a service for a year or so as apprentice to a doctor, followed by one or two years of lectures in a medical school. With the development of the sciences of medicine, the field has so broadened that today the course covers seven years, three in a university, and four in a medical school, followed by one or two years in a hospital.

This is somewhat different from what it was when I came to Oregon forty years ago and settled in a rural community not far from Portland. The doctor there was a veterinary surgeon who had taken up the practice of medicine as a side line to the more profitable profession of caring for sick horses and cows. I once asked him if he had any anxiety or scruples about practicing medicine without having been to a medical school. "Oh no," he replied, "so long as there is plenty of calomel and quinine in the country I can get along with the best of them. Sometimes, if I get badly stuck on a case, I call up Dr. Henry Jones, in Portland, and get his advice. However, maybe some of these days when I get time I'll run down to Portland and take a course or two in anatomy."

With the great increase of facilities needed in a modern school of medicine and the many added requirements necessary for the attainment of a degree, there has come about a great reduction in the number of medical schools and the number of physicians graduated annually.

In 1904 there were 166 medical schools in the United States, graduating annually eight thousand physicians. Today there are eighty schools with about four thousand graduates a year.

The University of Oregon Medical School, due to the good work of Dr. S. E. Josephi, dean for twenty-six years, to Dr. K. A. J. Mackenzie, dean for nine years, to Dr. Richard B. Dillehunt, the present dean, and their associates, has survived all the changes, and exists today as one of the best medical schools of the country. It is the only Class A medical school north of San Francisco and west of Denver, and is second to none in scholastic requirements.

The University of Oregon medical school was established in 1887. Dr. S. E. Josephi was its first Dean and remained in office until 1912. The early days of the school were trying ones and only the faith and courage of Dr. Josephi and his associates kept it alive in the face of discouragements great and many. Practically no support was given the school by the state. The magnificent sum of one thousand dollars a year was grudgingly appropriated, while thousands were annually expended to prevent the spread of scab among sheep and for the destruction of predatory animals. But in the past to the ordinary legislator the care and prolongation of human life never appealed with the same force as protection for the cattle, sheep and hogs of the country. But it is better now and our legislators of today appreciate the duty they owe themselves, their families and their fellow men, to foster and support the health agencies of the state of which none is more deserving than this medical school.

Dr. Josephi kept medical education alive in the state. Under his administration the school was ranked as Class A by the American Medical Association. All departments of the first two years were placed upon a full time basis. The first appropriation in the Northwest for medical education was made in 1909 at his solicitation. We do well to hold Dr. Josephi in high honor and esteem as a man who has faithfully fulfilled his duty as a citizen and freely given of himself to the cause of medical education and the preservation of human life.

Dr. K. A. J. Mackenzie, as the second dean of the school, held office from 1912 to 1920. Under him, in 1913, was brought about a merger of Willamette University Medical School with that of the University of Oregon, making the amalgamated school a better one than either was before.

In his latter years Dr. Mackenzie's ambitions were centered on the success of the school. He lived, breathed and talked medical school to the exclusion of almost all else. Quietly, modestly, but with the pertinacity characteristic of his race he was ever working for the school's advancement. Few know of the strings he pulled and the work he did to secure from the Union Pacific Railroad a gift of twenty acres, this site, the present campus of the medical school. And when the result of his loving labor was known the announcement was met, not with praise and commendation, but with doubt, aye even with jeers and the scoffing of fools who called his plan of installing the medical school on this site, the dream of an impractical doctor. But, nothing daunted, Dr. Mackenzie in private and in public defended his project so ably that "fools who came to scoff remained to pray" or better perhaps to share his labors and aid in his endeavors.

Largely by his efforts an appropriation of one hundred thousand dollars was obtained from the state legislature for the erection of the first wing of the new building, completed in 1918. This was contingent on his raising twenty-five thousand dollars from the citizens of Portland within a certain specified time. Supremely confident of the merit of his cause, but without experience of the difficulty of raising money in Portland for philanthropic purposes, Dr. Mackenzie permitted the time limit almost to expire before he started on his quest for twenty-five thousand dollars. He succeeded but only just got under the wire on time, and after he had made most strenuous appeals to his friends and he himself had made a considerable contribution.

Dr. Mackenzie still further strengthened the standing of the school by requiring a student to have two years of university work before admission.

About his last work was to cause nine acres of the campus to be deeded to Multnomah county as a site for the County Hospital. On this tract is nearing completion a fully equipped hospital that will replace the dangerous firetrap that now houses county patients. In affiliation with the medical school it will make Portland the mecca of medical men and the center of medical learning in the Pacific Northwest.

The good work inaugurated by Dr. Josephi and Dr. Mackenzie has been ably carried on by the present dean, Dr. Richard B. Dillehunt. In 1921 he presented to the legislature the needs of the Medical School and was successful in securing an appropriation of $113,000 for the new building, an amount that was matched by the General Education Board of the Rockefeller Fund. The Board, whose assistance has been of inestimable value to many a worthy institution, made a further contribution in 1922 of fifty thousand dollars for equipment. For the timely and valued assistance of the General Education Board the Medical School and the people of Oregon are sincerely grateful.

Dr. Dillehunt also obtained at the last session of the legislature an appropriation of $158,000 for maintenance of the school during the biennium. Aside from rendering this most valuable service to the school, Dr. Dillehunt has been ever insistent upon keeping it up to the highest standards of excellence. He is a worthy successor to those who previously had guided the destiny of the school.

One word more concerning the objects of the Medical School. They are:

First, to prevent disease by careful research work in its laboratories into the causes of disease, and by training physicians and others in prevention.

Second, to provide the best of medical service to the state by training high grade doctors in the most modern methods of prevention, diagnosis and cure, and

Third, to provide proper care for the indigent sick and crippled in the state in clinics and hospitals. For instance, in 1921 nine thousand cases were cared for in the clinics of the Medical School at the Portland Free Dispensary in cooperation with the People's Institute.

Before concluding this address I wish to say another word concerning the gain to the City, County and State that will come from close affiliation of the new County Hospital with the Medical School.

To obtain the best and most far-reaching results, Multnomah Hospital should be a teaching hospital because:

First, the patients get better care in such a hospital, since.

(a) The doctor who is teaching is under the constant scrutiny of the medical students and the faculty. Naturally he does his best.

(b) The student carries on the drudgery work in the laboratory which without his service would not be done at all.

(c) The patients have the advantage of the great laboratories of the medical school for diagnosis. They also have the attention of the skilled staff of physicians and surgeons who compose the faculty of the Medical School.

Second, better doctors are made in teaching hospitals than elsewhere since.

(a) As students there they see the best kind of work carried out.

(b) They learn how much of the suffering seen in the hospital could have been prevented.

Third. A teaching hospital is better for the county because in aiding the state in the operation of the Medical School it helps to make possible the best doctors. This cannot be done unless the young doctor has hospital experience.

Fourth. It is cheaper for the county, since

(a) With better care the average time of the patient in the hospital will be less.

(b) The county could not have such a medical staff, even if paid, as is provided by the Medical School, because the best physicians and surgeons will not serve on the county staff except as part of their teaching service.

In conclusion, let me state again the purpose of this meeting today, to-wit, that we may make public acknowledgement of the debt we owe Kenneth A. J. Mackenzie; that we may dedicate this building to his memory; and that we may consecrate Mackenzie Hall to the use and service of sugering mankind.

ORIGINAL CONTRIBUTIONS

PSYCHOANALYSIS, FREUDIAN AND OTHERWISE—A PLEA FOR RATIONAL AND WORKABLE METHODS

HAROLD W. WRIGHT, M.D.
SAN FRANCISCO, CALIF.
President California Society for Mental Hygiene

Since the earliest days of the practice of the healing art, physicians have studied the psychology of their patients and have therefore used in some measure the art of psychoanalysis in the practice of medicine. All physicians recognize the influence of the mind upon the body and vice versa. Some have paid special attention to the effect upon bodily functions of a mental attitude or of mental conflicts, and in so doing have illuminated many of the obscure syndromes that accompany nervous maladies, such as hysteria and neurasthenia. We are indebted to Charcot, Bernheim, Weir, Mitchell, Dejerine, DuBois and Janet for helping us to understand and treat such disorders quite as much as to those of the more recent epoch of applied psychology, represented by the Freudian school.

We are indebted, also, to such workers as Adler for showing us the basic inferiority of neuropsychophysical makeup which exists in most of the individuals who suffer from chronic nervous maladies of a "functional" type. In recent years, we are indebted also to the teachings best represented in this country by Adolph Meyer and August Hoch for cautioning us and stimulating us to try to find out all the facts in an individual patient, physical and psychologic facts, to determine what are the patient's assets and liabilities, organic and functional, hereditary and environmental, and not to be chiefly concerned about labelling the patient with a diagnostic classification before planning treatment.

The former way of going about the management of any patient is of course the only way a medical man should think of doing, whether he be a general practitioner, internist or neuropsychiatrist. Unfortunately there are, both in the medical profession and outside of it, those who are dealing with sick people with a psychoanalytic interest based on preconceived theory only. This is inexcusable within the profession of medicine and outside of it this is altogether deplorable. If a human being is ill, he must be studied and treated as a unit, historically and actually, and not as a bundle of separated parts or functions or mental attitudes. This would seem to be too obvious a fact to require mention but it is often forgotten. Also, the patient must be approached without a ready-made theory of the cause and nature of neuroses with which one wishes to fit the patient.

In the latter part of the last century, and in this century, medicine has been very much developed along the lines of bacteriology and biochemistry, in attempts to explain and treat all disease; so much so that until rather recently the psychology of the patient or "the patient himself" was in danger of being forgotten entirely. No doubt this tendency to forget the patient has been responsible for the rise of various cults outside the profession of medicine, and no doubt this tendency has been responsible for specialists in psychoanalysis, including the Freudians. All this reaction from a too materialistic viewpoint on disease has been very beneficial to all concerned; it has lessened the amount of unnecessary surgery and drug therapy and it has tended to make broader minded and better doctors of all of us. It has also done some harm by producing a drifting away of sick people from the hands of the necessarily wiser medical man to the hands of the more ignorant and sometimes unscrupulous lay practitioner of psychopathology, which science, by the way, is a department of medical science and must continue to be.

The first principle involved in any phase or method of psychoanalysis or psychotherapy, Freudian or other, is that *mental conflict,* with the emotional disturbance thereby produced, can derange the function of organs of circulation, digestion, elimination or internal secretion, either temporarily, or, if the cause persists or frequently recurs, chronically. There is nothing new in saying this. It has been a matter of common experience since man became selfconscious, long before any school of medicine or any lay cult began to insist upon it; we can see it in ourselves and in others, human beings and lower animals. Cannon and Crile are to be thanked for scientifically demonstrating the effects of emotions upon body cells, tho of course we knew something about it before from clinical observation.

Not all of us, however, have been frequently enough and properly aware of the prolonged effects of psychic or emotional trauma upon our patients or ourselves, but have, together with our patients, been too apt to ignore the fact that an unpleasant emotion which arose first a long time ago may frequently be reactivated by subsequent experiences and contacts and by half-conscious reminiscences, and that such a manner of reacting to something disagreeable has contributed largely to the makeup or personality of the individual patient; and hence has contributed to a chronic nervous malady for which such measures as rest, diversion, hydrotherapy, etc., including a trip to Europe or elsewhere, will be only palliative and not curative.

The Freudian school would have us believe that the original emotional cause or mental complex arose very far back indeed, in infancy or childhood, or one might say even before birth by phylogenesis, e.g., the Freudian elaboration of the Oedipus story. The Freudians would have us see that the emotional complex is always in the last analysis, when we have the time and energy and skill to pursue it as far as we should, found to be a complex of sexual origin. Hence we have sexual interpretations of dreams, no matter what their content, sexual interpretations of mannerisms, tics, our prejudices, our witticisms (if we have any); if not, our lack of wit is also so interpreted. Hence the widespread interest in Freudian literature, out of which no doubt many people get quite "a kick". It does not seem to occur to some of the Freudians that any of their interpretations can possibly be the result of their own complexes or imaginative powers. For example, Ferenczi, a close and loyal follower of Freud, in describing a dream of a patient under his care gives the following description and interpretation:

> I go into a large park, walking on a long path. I cannot see the end of the path or of the garden hedge but I think I will go on until I arrive at the end.

Without further comment or description he analyzes the dream thus:

> The park and the hedge of the dream resemble the garden of one of her aunts, with whom she passed many happy holidays in her youth. She remembers in connection with this aunt that they customarily shared the same room, but when her uncle was at home the young guest was put out into a neighboring room. The girl at that time had only a fragmentary conception of sex matters, and often tried by peeping thru the cracks in the door and the keyhole to find out what was going on in her uncle's room. The wish to get

to the end of the hedge symbolized in this dream the wish to get to the bottom of what was going on between the married pair. This wish was further determined by the experience of the day before.

Brill, in his translation of Freud, tells us that the horse symbolizes always the male sexual organ, when such an animal appears in dreams; that a house with its windows and doors represent the human body and its various openings.

Many similar references could be quoted if time permitted. So it is not surprising that some one remarked to the writer several years ago, when Freud and his writings were being first much discussed at psychiatric society meetings in New York, "To the Freudian the whole world is a cloaca."

Ferenczi and others in writing of homosexuality say in substance that the rivalry between men, the disputes and competition, and the student duelling in Germany represent repressed and transferred homosexual instincts, carried over to a more acceptable form of expression of them.

But this is not all that results from a too exclusive devotion to a theory. Due to false elaborations on the Freudian conception of the neuroses by avid readers of Freud, we see the flapper and the Greenwich Villager type of person tending toward a Bolshevistic philosophy, refusing to admit that there is any rational sanction for the control or repression of one's desires, no matter what sort of desires they are, and this tendency has at least spoiled such people's manners, if not their morals. Unfortunately, too, I think, for the good of society, we see as results of the activities and literary ambitions of lay followers of Freud, articles dissecting the moral code and the religion of peoples; articles in which the Christian creed, as well as others, and the personality of the Founder of Christianity, as well as other great historical characters, are dissected and analyzed and subverted to homosexual or heterosexual in-interpretations to the point of absurdity and *ad nauseam.*

I fail to see what of good is to be expected from this or what reason there is for taking such efforts seriously, and I believe they are harmful. In the face of such extravagant interpretations, is it any wonder that psychoanalysis in general is in disrepute among the majority of physicians? This is very unfortunate, because the doctrine that mental conflict causes nervous illness must not be ignored by the medical profession, if it is going to compete with all the psuedomedical cults and half-baked lay practitioners of psychotherapy.

The present writer cannot deny that in some cases a sexual basis exists for a neurosis and that psychosexual trauma, or perversion or introversion, or sexually stimulated energy unsatisfied or uncontrolled and undirected into other forms of activity or interests, or anxiety over past sexual irregularities, are factors in neurasthenia, hysteria or anxiety neuroses. But one who deals with many nervous patients with his eyes open and his mind open cannot fail to recognize many other factors. He also cannot help discovering that it is often the case that the psychologic cause of the symptoms is not hidden from the patient at all, is not unconscious or very deeply subconscious, is not related to something that happened so very long ago, but that the patient simply does not yet see that his or her symptoms are due to these psychologic causes, because the patient has been taught by our profession to look for definite physical diseases or causes to explain physical symptoms, and is not aware that such symptoms have any but a physical cause. To see the real facts is often all the patient needs in the way of psychoanlysis; namely, to be told the truth in order to be free from unnecessary fears about symptoms, and if the truth is accepted, half the battle is over. But, unfortunately, the truth is not always accepted and one has to resort to measures of therapy, which are in a way unscientific and make one feel like a charlatan in being obliged to use them. This is, of course, more apt to be the case, if we are dealing with a very ignorant or an unintelligent patient or with those who are full of preconceived notions about their condition, notions which they have usually obtained from their neighbors and often, too, from their previous medical attendants.

The war taught us that hysteria could be due to a very simple psychologic mechanism which had nothing to do with sex; and civil practice, especially industrial insurance practice, has taught the same. Civil practice also is full of cases where a severe neurosis is the result of constant friction with one's associates; the wounding of one's vanity; envy of others and dis-content with one's lot in life; indecision about something of apparently great importance relative to one's future; inadequacy to a situation or job; a failure to have found one's proper level of activity or the work one is fitted for or can be interested in; regrets over past mistakes of judgment; lack of frequent enough relaxation or play and resultant fatigue and depression; a feeling of inferiority due to some previous humiliation or setback in one's career and so on.

The following two cases I would like to briefly detail: There are sexual factors in both of them and a strict Freudian would perhaps see no other mechanism than sex and perhaps a very far reaching sexual mechanism, but the writer believes that the element of indecision with a fully conscious moral conflict are the main factors in these two patients.

Case 1. A man of thirty-five, with negative family and previous personal history complained of feeling constantly uneasy and tense; that he could not concentrate on his business without unusual effort and felt that he must frequently get away for a change of scene. There were no complaints referable to the abdominal organs, except frequent eructations of gas. His sleep was unrefreshing and often disturbed by dreams. He had such a tense feeling in the head that he thought he must become insane. He sought advice chiefly because of this fear.

The physical examination was entirely negative, and after a few hints as to the general psychology of nervous disorders of non-organic basis, the patient told of having been separated from his wife for the past two years because of "incompatibility," and that, altho he was unhappy during this time, he had not been afflicted as now until after he had met another woman whom he is infatuated with and whom he believes to be the ideal wife for him. He wishes to marry her but he cannot make up his mind to do so because of his child, to whom he feels he is still responsible and who is with the mother; also he has religious scruples about divorce.

So he has been in a state of almost constant indecision, at one time thinking he should let nothing stand in the way of his own happiness in obtaining his chief desire, and on the other hand restrained from fulfilling it because of a fear of doing moral wrong. He was surprised to be told that this complex had everything to do with his symptoms.

Case 2. A young married woman without children complains that she is "nervous," by which she means that for several months she has felt very uneasy and depressed, has spells of violent trembling, bad dreams from which she wakes in a violent tremor. At one time after such an awakening, she felt as if paralyzed in her limbs and did not leave the house for a week for fear that she might fall in the street from a stroke of paralysis. She has been taking nerve tonics at the suggestion of friends.

Physical examination shows a healthy looking, rather childish featured girl of 26 years, without any evidence of disease. At first she states that she has no idea at all as to what makes her so nervous but, after a little questioning, she tells of having been married six years ago after a brief courtship and of having felt for the past two years that she should not live with her husband because she did not love him. Her husband is very kind and loyal, altho he is a travelling man away from home a good deal. He is very attentive when at home and she can accuse him of nothing. Before her marriage, however, she was rather fond of another man, a different type, for whom she feels an exalted "spiritual love." She used to see this man frequently after her marriage; he lived in the same apartment house, but later she moved because he was so much in her thoughts. But she has occasionally corresponded with him.

She is a Roman Catholic and has told her priest as well as her husband and her mother of her real love for the other man. Her priest is firm in his advice to remain with her husband and has told her that she cannot marry again without mortal sin. Her mother wants her to do whatever will give her the most happiness, but her advice stops there. Her husband declares that he will win her love yet and will not consent to a separation. She feels that she must get away by herself. She has tried to interest herself in music and the study of Spanish but can get no relief from a feeling of uneasiness and vague fear and she cannot make up her mind what step to take. She came to the writer for medicine for her nerves only and seemed to have no idea that medicine was not what she most needed.

These cases represent a frequent type of anxiety neurosis; and, as is always the case with the neurosis, they occurred in persons of moral development above the average and express a conflict of a moral standard with a primitive instinct, resulting in indecision and nervous fatigue, vagatonic symptoms, etc. The complex here is not subconscious, but the symptoms are not understood by the patient in their true light.

In closing, I wish to caution anyone against psychoanalyzing the definitely insane patient, especially the paranoid praecox type and the manic-depressive type; one would not be successful anyway and considerable aggravation of symptoms will occur. In a convalescent or recovered stage of psychoses it is another matter; an attempt then to find out what psychologic complexes contributed to the attack and explain them to the patient will sometimes be helpful in averting a relapse. Hypnosis or other forms of suggestion are likewise dangerous procedures, if a psychosis is present and often unwise in many psychoneuroses.

As to analyzing one's friends or relatives, here too it is better to keep one's hands off. One may lose one's friends in an effort to prove one's theories to them.

And, finally, a thoro physical examination is the first thing to be attended to when confronted with a neurotic mentally afflicted or any other patient.

The neurotic is one with self confidence impaired and selfconsciousness enhanced and *just* a psycholanalysis may still further aggravate these traits. What he most needs is an object or a cause greater than himself to work for and fight for and live for and admire. This is where religion which is not self-seeking but self-effacing comes in, also art, music, literature, social service or fighting for one's country; or, if that does not come one's way, succoring the wounded in a great cause. Hence we saw many neurasthenics at least temporarily cured during the great war. Often it is self-sublimation more than intricate self-analysis that is most needed.

SOME FACTS AND FALLACIES ABOUT PSYCHOTHERAPY*

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Every once in so often somebody rediscovers an old, established fact, decorates it according to fancy and introduces it to a credulous public as something startlingly new. Psychotherapy is as old as the human race, and suggestion in some form or other has been the basis of innumerable methods, cults, isms, tics, pathies, etc., devised or organized for the treatment of the sick.

The mother, who from time immemorial has kissed the child's hurt "to make it well," was unconsciously employing psychotherapy. The Indian medicine man with his charms, chants and dances was a psychotherapist. Perkins, with his metallic tractors, Mesmer with his magnets, christian science with its negative delusion, the Emanuel movement (a Boston emanation), and now Emile Coue, with his conscious autosuggestion; all use the world-old method of treatment by psychotherapy. Without being sacrilegious can we not also say that the cures brought about by pilgrimages to the various shrines of the saints have psychotherapy as their basis?

To deny that human beings have not been benefitted by the several methods I have indicated is a confession of ignorance, and to ridicule such methods is futile, unless we have something better to offer; or will combine psychotherpay intelligently and scientifically with our other methods of treatment. We all realize the limitations of psychotherapy and are cognizant of the immense amount of harm that occurs to patients who blindly rely on one method of treatment, but are we, as physicians, entirely free from the criticism of having overlooked or neglected the real value of this therapeutic measure?

One has only to scan the pages of our medical periodicals to find that there is an awakening of interest regarding psychotherapy and that many members of our professon are giving the subject much serious thought. A not infrequent observation is that, because of our lack of attention to this form of treatment, we have left the field open to the quacks, various nonscientific cults and to the church. At this place I would like to make the statement that every successful physician uses psychotherapy in his practice, either consciously or unconsciously, and that one reason why the field has been more or less preempted by outsiders is the fact that the public is not sufficiently impressed by the familiar and long suffering practitioner of medicine, but that it turns to the new, the bizarre, the element of suggestion being far more potent if dressed in an unusual, startling, entirely different guise.

Psychotherapy has been defined by Buzzard (*Mental Hygiene,* July, 1922) as "a convenient name applicable to all forms of treatment that depend on education, persuasion or suggestion, and not on physical or chemical influences for their success." That the mental condition, the emotional state, influences the functions of the nervous system is well known to the psychologist and the clinician. The physical reaction to fear, as shown by the trembling, perspiration, cardiac palpitation and pallor; the vomiting of a nervous woman following an emotional shock; the frequent urination and even diarrhea which has been known to complicate a severe medical examination in our student days, are familiar examples of "the influence of mind over matter." Or one has only to refer to the splendid work of Cannon on bodily changes in emotional states for further confirmation, and what are the protean manifestations of hysteria but somatic symptoms of psychic origin.

To quote from Dercum (Rest, Suggestion and Other Therapeutic Measures in Nervous and Mental Diseases), "Mental factors influence more or less the physical condition of every patient, and this fact is true whether the patient be suffering from an acute or a chronic, a general or a local affection; from disease of the nervous system or of other structures; from organic lesions or from purely functional disorders."

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* Read before Inland Empire Medical Society, Moscow, Idaho. Nov. 4, 1922.

The aim of the psychotherapist is to establish in the patient that state of mind most favorable for the amelioration or cure of the condition with which he is afflicted.

Of the various methods of administering or "exhibiting" psychotherapy, suggestion is probably the one most frequently used. To suggest is "to convey to, or arouse in the mind of another, some thought or idea." This may be verbal or it may be brought about or reinforced by drugs, by electricity, by "readjustments" of alleged misplaced vertebrae, the personality of the physician, the manner of a nurse, the "atmosphere" of the hospital.

Autosuggestion has been defined as "the implanting of an idea in oneself by oneself." Persuasion is "the influence of argument, solicitation, entreaty." Education consists of a frank explanation of the condition, appealing to the reason of the patient (if he has any) to secure his cooperation. The Eddyist persuades, assures the sufferer that he is well and denies the existence of disease.

Coue admits the existence of disease but uses autosuggestion, instructing his disciple to repeat over and over again, "Day by day, in every way I am becoming steadily better," or "It passes, it passes." As an example of conscious autosuggestion it may not be out of place to quote from a statement made by Major General Ireland to the Senate Committee on Military Affairs, that of the 2,500 cases of shell-shock awaiting transportation to the United States, 2,100 recovered within a day or two after the armistice was declared. (Foot note in *Jour. A. M. A.* Vol. 79, No. 11, Sept. 9, 1922.)

Another method of applying psychotherapy is the use of suggestion while the patient is in the state of hypnosis. As far back as 1841, James Braid, an Englishman, demonstrated the important role played by suggestion in the phenomena of hypnotism, and Charcot considered the hypnotic state as an artificially induced or provoked hysteria. That suggestion to a person in the hypnotic state can remove certain symptoms of a psychoneurosis is an established fact, but it is equally true that it does not remove the underlying morbid condition, nor the tendency for other symptoms to appear.

Psychoanalysis, as originally described by Freud, of Vienna, consisted in the unearthing of buried or suppressed memories of past experiences, the recollection of which had become subconscious. The original memory of the act and the associated emotion had been converted into a pathologic symptom. By psychoanalysis the subconscious complex is brought into the field of normal consciousness, thus removing the symptom.

Unfortunately, Freud believed that the suppressed memory always had a sexual basis, and he also evolved a rather complicated and unnecessary technic, thus surrounding the grain of truth in his ideas with considerable chaff. Also, unforunately, the followers of Freud have gone to extremes, frequently letting their imagination run riot. It is not my purpose here, however, to enter into a discussion of psychoanalysis, except to affirm that psychoanalysis, when directed toward the relief of a patient's symptoms, becomes psychotherapy, and that suggestion, altho denied by Freud, plays a very important role in psychoanalysis.

Psychotherapy, in whatever guise administered, is most effective when combined with physiologic methods; rest, full feeding, massage, and appropriate medical treatment. The so-called rest treatment is the best background for psychotherapy or, to express the thought in another way, psychotherapy is a fundamental and important constituent of a proper rest treatment. Here the patient is isolated, removed from the irritations and vexations of the daily struggle. He or she is rested, massaged, full fed, diverted, amused. Under these conditions the various "complexes," both buried and unburied, that may have contributed to the patient's neurosis, are readily detected, and the physician, by education, persuasion and suggestion, helps the patient to adjust or adapt himself to his life problems. The mere keeping of an individual in bed and causing him to put on flesh is but a small part of a "rest cure."

The patient is not interested in anything but the results, so does not concern himself to any great extent about the method. Anything that convinces him that he will be helped, that inculcates an attitude of optimism, of confidence, will help him. Psychotherapy not only helps by influencing the mind, the emotional state of the patient, but thru the emotional state actually brings about functional changes in the circulatory and respiratory systems, the glandular structures, digestion, secretion, etc.

Adolph Meyer said, (Inter-Relations of the Domain of Neuropsychiatry. *Archiv Neurol. and Psych.,* Vol. 8, No. 2, Aug., 1922): "The task is not only the care of paralyzed legs and arms and troublesome nerve growths and brain lesions, accompanied by impaired speech and other disorders; it is especially the so-called mental aspect of the person which is likely to guide or misguide public opinion; that which constitutes the moods and morale of the patients, and the willingness and capacity to accept and use assistance, and to develop a real conscience about health."

In closing, let us consider briefly and epigrammatically some facts and fallacies about psychotherapy.

Psychotherapy may cure a mental strabismus, but it will not straighten crossed eyes.

It will remove the symptoms of an ordinary hysteria, but will have no effect on a traumatic neurosis until the claim for damages is settled.

It will cure the majority of cases of shell-shock, if immediately and properly applied, but is of doubtful value in a well established compensation neurosis, nor will it pay the soldier's bonus.

Psychotherapy will unearth a buried complex but it will not enucleate a submerged tonsil.

Psychotherapy enables the christian scientist "better to endure the ills he has," but does not prevent him from "flying to those he knows not of," and having a possibly non-christian and nonscientific M. D. sign his death certificate.

Chiropractic adjustments of the cervical spine, combined with a liberal dose of psychotherapy have been said to cure a facial palsy, but one wonders what the seventh cranial nerve was doing down in the patient's neck.

Psychotherapy frequently enables a mediocre doctor to establish himself in a large and lucrative practice, while the lack of it sometimes saves an able physician from the annoyance of having to pay an income tax.

FOCAL INFECTION FROM THE INTERNIST'S POINT OF VIEW*

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During the last decade attention has been directed to localized infections in the body as possible foci from which bacteria or toxins may be absorbed or carried by the blood or lymph streams to other sites and there set up new areas of inflammation or tissue destruction. These so-called foci of infection have gradually claimed wider and rightful cognizance and today one of the main responsibilities of the internist in making a careful survey of a case is to determine the presence of all possible acute or chronic inflammations of bodily tissue, wherever they may be in the organism.

So much has been written about teeth, gums, and tonsils being the seats of foci of infection that it is immediately important for us to point out that an infection either primary or secondary in nearly any tissue of the body may be an area from which bacteria or toxins are disseminated, and thus cause disease in distant tissues. It is certainly true that the oral and nasal cavities are the usual sites for primary foci of infection. Pyorrhea, dental caries, apical root abscesses, sinusitis, otitis media, mastoiditis, tonsilitis, and even low grade infection of the mucous membranes may be the primary source of general or local symptoms or disease in other parts of the organism. However, it is obvious that an infected gastric ulcer, gall-bladder, or appendix, a chronic bronchitis, tuberculosis of the lungs, and infected prostate or fallopian tube, bacterial involvement of any of the numerous lymph glands, infected venous thrombi, as well as a multitude of other possible infections in skin, muscle, bone or any organ of the body, may just as well as teeth or tonsils be the foci from which infection may be spread to other parts of the body.

Thus, in searching for foci of infection as to the cause for certain obvious diseases, and more often distressing tho indefinite symptoms in a patient, the real problem rests in a wise analysis of such tissues of the body as the appendix, gall-bladder, lymphatic glands, or other areas, where silent infection may exist. To determine the relation of a low grade colitis to arthritis or a possible cholecystits to bilious headaches is difficult. The first essential is to be sure that infection in colon or gall-bladder exists, and the best opinions are often at variance over these questions. To a lesser degree, the question of infection in teeth or gums is difficult. Tho given careful x-ray pictures and intelligent dentists, the presence of such trouble should be rather definite.

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* Read before San Joaquin Medical Society, Stockton, Calif., Nov. 17, 1922.

Much credit is due Frank Billings, the veteran internist of Chicago, for his interest in focal infection as a cause for disease. His articles have been freely consulted in this paper. From his clinic has come much of the information which has pioneered and clarified this question we are considering. Rosenow, who is now with the Mayo clinic, first worked with Billings and evolved his theory thru experimental work of the elective localization of bacteria. He feels, as you know, that a streptococcus, for instance, which has caused infection of the appendix, when cultured on media and injected into animals, will cause infection of the appendices of those animals in a greater percentage of cases than of any other organ or tissue in them. Numerous articles have been published by Rosenow dealing with elective localization in cholecystitis, myostitis, neuritis, peptic ulcer, herpes zoster, and many other infections, all of which studies go to substantiate the recognized danger of foci of infection, and to reinforce Rosenow's theory of elective localization.

Other workers associated with Billings have contributed largely to this subject. Irons has emphasized the importance of foci of infection in iritis. Capps has studied arthritis from this same point of view. Bacteriologists, partly thru the encouragement and stimulus of Billings, have conducted intensive investigations of the streptococcus, as well as other bacteria, such as the staphylococcus, pneumococcus, fusiform bacillus and tubercle bacillus, in relation to focal infection. These studies, especially of streptococci, have shown that there are dozens of varieties of this general type of organism, all having different cultural and morphologic characteristics and possessing varying degrees of virulence and powers of infection. Many varieties of the pneumococcus, meningococcus, and even the tubercle bacillus, are being described and the importance of the special variety of bacteria is being increasingly realized in the type of infection existing in the body.

VARYING SUSCEPTIBILITY TO FOCI OF INFECTION

Many physicians feel that the relation of foci of infection to disease is exaggerated and based on hypothesis. They see patients with old infection of teeth, tonsils, prostate or mastoid without any obvious symptoms or organic disease resulting therefrom, and make the mistake of drawing general conclusions in regard to etiology and treatment from their own experience, even tho it be in a large private practice. The fact that foci of infection do cause general and localized disturbances in the body should be accepted not because of personal experience, but because of the careful and extensive studies which have been conducted in the big clinics of the country and which definitely show the important relation of foci of infection to disease.

But why is it that an acute or chronic focus of infection may or may not cause general symptoms, such as fever, headache, general bodily discomfort, or localized rapid or insidious tissue damage? One infected tooth may produce neuritis in one person, and many apical abscesses may be carried for years by another individual without the slightest apparent difficulty. Among the many factors which determine the production of disease or symptoms by foci of infection are the virulence of the bacteria which are discharged from the localized focus of infection into the blood stream, the amount of immune bodies to the particular invading bacteria there are in the tissues and blood, or the peculiar pathogenicity or infectivity of the bacteria, which latter factor is termed by Rosenow elective localization, and which determines the special tissues, be it joint, kidney or endocardium which will be attacked, inflamed or injured.

It is obvious, moreover, that in the same way that the artificial infection and consequent absorption of typhoid bacilli will produce an increase in the immune bodies to the bacillus typhosus, so will the gradual absorption of toxins and even the occasional bacteremia from a quiescent focus of infection constantly stimulate immunity in blood and tissues against the bacteria in that focus, and thus keep the infection under local control. But when trauma, body chilling, exhaustion, old age, undernourishment or disease reduce the resistance and the power of tissues and blood to produce immune bodies, then the focus of infection begins to gain the upper hand and evidences of uncontrolled bacteremia appear. This lack of immunity due to gradual exhaustion of the defense producing powers of the tissues against long standing focal infection is probably responsible for the frequency of chronic infectious arthritis and certain other infections in people past middle age. Focal infections are particularly dangerous in children, moreover, due to the fact that immunity must be gradually established during early years by successive infections. In children foci of infection are often associated with arthritis, acute nephritis or some other less common complication, and when such occurs foci of infection particularly around deciduous teeth, tonsils or in the skin must be sought for. Thus it is easy to see why certain foci of infection are silent and why others are responsible for infection in the body.

FOCI OF INFECTION AS A CAUSE OF DEFINITE DISEASE ENTITIES

When foci of infection introduce bacteria into the lymph or blood streams, systemic or organic disease may result, if the bacteria are of such virulence as to overcome the body immunity existing at that time. The reaction in the tissue invaded may be acute and fulminating, as in an acute attack of appendicitis associated with tissue destruction and consequent gangrene, or it may be low grade in type and go into a chronic state of tissue infection, or even entirely subside. Certain of the more common types of systemic diseases which may arise from foci of infection will now be discussed.

Acute rheumatic fever always originates from some focus of infection which contains a specific type of streptococcus. This streptococcus may vary in morphology and may grow as a diplo-, micro-, as well as a streptococcus. It has been cultivated from foci of infection in tonsils, alveolar abscesses, infected sinuses, abscesses involving nails of fingers and toes, infected lymphatic glands, as well as other infected tissues. The bacterium is not a pus producer, is of low virulence, and Rosenow found it thrived at low temperatures and grew well in animals which were chilled, which latter fact is one reason why chilling of the body is not desirable. Acute rheumatic fever is most prevalent in the fall, winter, and spring, when people are subjected to damp and changeable weather. The tonsils and oral lymphoid tissues are the usual sites for the growth of the streptococcus rheumaticus, and as a result children and young adults are most frequently affected because of the overgrowth of lymphatic tissue in them.

These streptococci enter the blood stream usually from the tonsils and, having a seeming specific affinity for joint tissue, lodge in the terminal blood vessels, and there excite a local reaction. Small hemorrhages and serofibrinous exudates occur which produce connective tissue proliferation and adhesions, finally, of serous surfaces. During the first few days of the joint involvement the microorganism can be cultivated from the serous exudate, but later the fluid becomes sterile, due to the antagonistic action of the fluid on the bacteria. It is most important to search for and eradicate the focus of infection which harbored this specific streptococcus of rheumatic fever; otherwise, attacks of the disease may recur with the always possible involvement of the heart valves. Tonsils, as before mentioned, must always be regarded with suspicion, since they may contain streptococcus rheumaticus infection, even tho they are innocent in appearance.

Endocarditis may occur with acute joint infection or as a sole clinical entity. The most common bacterium which attacks the heart valves is the streptococcus rheumaticus, tho it is well known that other streptococci, meningococci, pneumonococci, gonococci, and the typhoid bacillus may produce similar pathology, tho usually of a malignant type. The rheumatic organism because of its low virulence may produce endocarditis with little symptomatology except afternoon fever and moderate malaise. Such mild infection of the heart valves finally produces sclerotic changes with much deformity in the valve leaflets with severe results as far as heart function is concerned.

Myocarditis frequently occurs in acute infections, such as rheumatic fever or pneumonia and also in middle-aged or elderly people who have harbored foci of infection for years, and where heart muscles have been continuously assaulted by bacteria carried in the blood stream from foci of infection in tonsils, dental alveoli, gallbladder, or any other focus in the body.

Acute chorea is undoubtedly due to multiple cerebral bacterial embolism by a streptocococcus of low virulence. These streptococci gain entrance to the blood stream thru some focus of infection. The tissue reaction produced in the brain is mild and is usually accompanied by an insidious infection in the heart tissues.

I have been especially interested in the relation focal infection has to thyroid disturbances. Many people who develop exophthalmic goiter harbor marked infection, especially in teeth or tonsils. I have seen several such patients recover completely without other treatment than eradication of such focal infection. One recent case of exophthalmic goiter seemed definitely to develop from a cholecystitis. However, no experimental bacteriologic evidence is available which allows us to conclude that exophthalmic goiter is due to an inflammation originating in foci of infection elsewhere in the body. If such were the case, a specific bacterium would have to be assumed which produces special proliferation of the thyroid cells, and has a specific affinity for thyroid tissue, since simple thyroiditis, which definitely results from foci of infection, is not associated with hyperthyroidism. I feel, however, that it is most important to raise the general resistance of the body in all these cases by eradication of all areas of bacterial growth. Acute thyroiditis, resulting from inflammation arising in some focus of infection, is not uncommon. It is especially frequent in acute rheumatic fever, and I have seen it apparently arise from infected tonsils and teeth. Such inflammations are not necessarily accompanied by hyperthyroidism and may result in complete replacement of normal thyroid parenchyma by scar tissue. This destruction will, of course, result in the clinical entity known as hypothyroidism or myxedema, which therefore usually owes its origin to foci of infection.

Herpes, as is well known, is due to an infection of the ganglia of cranial nerves or the posterior roots of the spinal nerves, followed by Wallerian degeneration. When the nerve regenerates, the herpes heals. Rosenow has demonstrated the relation which infection of teeth and tonsils has to herpes, and the occurrence of herpes usually means streptococcic focal infection.

Foci of infection harboring the gonococcus may be responsible, of course, for arthritis due to the embolic invasion of the end arteries of the subserous tissues. Certain virulent gonococci may also produce a malignant type of endocarditis.

Acute appendicitis is usually the result of a bacteremia arising from a focus of infection. According to the virulence and number of the invading organisms and the degree of tissue immunity the reaction will be mild, severe, or even destructive enough to produce gangrene. The mild infections are associated with swelling and exudate which may produce changes enough in the appendix so that the ordinary saphrophytic organisms, such as the colon bacillus usually found in the intestine, may become active, form pus, and invade the mucosa. If the focus of infection which originated the trouble is not removed, the patient will have repeated attacks of appendicitis.

Cholecystitis, without doubt, is usually due to some focus of infection in teeth, tonsils, sinuses, or some other focus in the body. Rosenow has conducted many experiments which help to demonstrate this etiology and point to his theory of elective localization. The most common organism obtained by culture of the gall-bladder wall is the streptococcus. As is well known, gallstones usually give positive cultures from their centers and usually the streptococci are found.

Acute gastric and duodenal ulcers may be due to streptococci circulating in the blood stream from some focus of infection in the body. Whether infection is at the base of all peptic ulcers is a question which cannot be discussed now.

I have been greatly interested in the diagnosis and treatment of diabetes for the last eight years. Allen recently stated that many cases of diabetes are due to pancreatitis, arising from some focus of infection in the body, and its frequent association with cholecystitis emphasizes this possibility and suggests that the infected gall-bladder may act as a focus itself. It is, therefore, most important that patients with a diabetic inheritance should keep free from all foci of infection, so that their pancreatic glands, which are probably more susceptible to infection or toxins than the glands in other individuals, are not laid open to damage. It is a well known fact, moreover, that infections are very prone to reduce the tolerance of an actual diabetic, thus indicating a reinfection or added toxic destruction of the pancreas resulting from such infections.

Osteomyelitis may be caused by invasion of bacteria thru the nutrient artery of the bone, and such invasion may be initiated by trauma. Tuberculosis is another classic example of a focus existing in any tissue which may cause infection of nearly any other tissue in the body, when resistance is lowered.

Acute nephritis is usually the result of focal infection. Vascular lesions together with glomerular inflammation occur, and streptococci cultured from teeth or other foci of infection in a patient with acute nephritis will, when injected into animals, usually produce acute nephritis. Ophuls feels that most chronic nephritis is the result of hematogenous infection from distant foci.

Billings says "that long observation and study of chronic infectious arthritis, including clinical laboratory and postmortem investigation, convinces the writer that principles involved in focal infection afford a rational explanation of this vexatious problem." These patients usually have or have had extensive focal infections at some time during life. Streptococci have been isolated from the affected joint tissues. The invading bacteria are of low virulence and block the small blood vessels in the joint membranes by cellular invasion and serofibrinous exudate. Secondary sclerosis and contraction result, and the blood supply is cut off, resulting in malnutrition and consequent metabolic changes in joint tissues, bone and cartilage. The continued malnutrition increases the changes in tendons, ligaments, cartilage and bone, and proliferative or atrophic disturbances occur. Invasion of the muscles and tendon sheaths aggravates the deformities of the joints. If the original foci of infection persist, the damage continues and it may well be that the joints finally become foci themselves.

In passing, we will call attention to the fact that so-called muscular rheumatism, chronic neuritis and iritis, as well as many other diseases, are frequently caused by foci of infection located in the head, gall-bladder and other parts of the body.

The relation which foci of infection have to asthma or any of the other anaphylactic diseases is, of course, different from that to any of the diseases already mentioned. The tissues of the individual afflicted with bacterial asthma become sensitized to the protein of the bacteria responsible for the asthma, and the asthmatic will continue to be ill until the focus of infection is removed, or until he desensitizes himself to the bacteria in question. These patients, moreover, usually require careful desensitization with the bacterial protein obtained by culture from the focus of infection before a good result is obtained.

There has been some question as to whether a person can become sensitized to a bacterial protein in the same way that he is to food or animal hair or pollen protein. Considerable experience on my part with all these types of sensitization makes me certain that such bacterial sensitization exists, and that in bacterial types of asthma careful use of bacterial vaccines is valuable. Two recent cases of asthma in men of 70 years will illustrate my point. Both had been ill with nearly continuous asthma for several months. Careful skin testing with many food proteins, and the proteins of animal hairs and pollens, gave negative results. Autogenous vaccines from sputa in both cases contained the diphtheroid organism described by Walker as a frequent sensitizing cause for asthma, and two or three injections of very small amounts of this vaccine were enough to desensitize both sufficiently so that their asthma cleared up immediately. In our hay fever work, moreover, we have found that autogenous vaccines, when used in conjunction with our pollen antigen solutions, in some cases yield better results than do the pollen antigens alone.

REMOVAL OF FOCI OF INFECTION

One of the important questions in medical treatment today is whether foci of infection when discovered should be removed in a radical way. As we have seen, there is little doubt but what any infection, whether in teeth, tonsils or the abdomen, may at any time cause a bacteremia with resulting inflammation in other parts of the body. This, as we have seen, is especially apt to occur in debilitated conditions or where the immunity to a given bacterium is temporarily reduced. Realizing these facts, it is our opinion that the general rule should be to remove all foci of infection in a radical way, when it is consistent with the general problem of the health of the individual.

Teeth and tonsils are apparently so often to blame for systemic infection and may apparently so often produce damage to vital organs, such as the kidneys or heart, that they especially should be dealt with in a radical manner. I see no justification for allowing infection to remain untreated in gums, teeth or tonsils. The argument that a large percentage of tonsillectomies are apparently useless and do not cure the disease does not hold, for even if relief is obtained for a given condition in only 10 or 15 per cent of the cases after tonsillectomy, there is sufficient justification to have operated on the other 85 or 90 per cent. I recently saw a busy man who suffered nearly constantly from headaches, and the only thing that could be found was low blood pressure, for which he had been given strychnine and other drugs to the limit. The tonsils looked fairly innocent, but on the recommendation of a good nose and throat man, they were extracted, and as a result the blood pressure has been normal and the headaches have been absent during these last eight months.

In regard to teeth, it is certainly the experience of all physicians that neuritis and neuralgia are frequently cleared up by the removal of a silent and unsuspected apical abscess and, even when no constitutional disease is found, in the presence of pyrrohea and alveolar infection, there is so much evidence pointing to occurrence of such diseases as pernicious anemia from foci of infection as well as any of the other diseases which we have already discussed, that there is no excuse in my mind for not being sure that infection is eradicated from the mouth, especially if the patient is willing to have it done. The responsibility not only rests with the physician, but with the dentists also to be sure that their patients are given the benefit of a modern diagnosis and the treatment which is today possible.

I feel that it is most important for physicians and especially the internists, to form their opinions in regard to dental infection with the help and assistance of dentists. And in like manner, it is most important for dentists to be sure that patients who present foci of infection in their teeth and gums have been looked over for all possible foci of infection by physicians capable of such work. The nose and throat man as well as the urologist may have to be consulted, in order to obtain the best and wisest opinion which is able to be rendered today.

A difficult problem arises in determining how radical we should be with foci of infection in the abdomen. In general, the wisest plan in most cases is to be radical. However, one often hesitates in advising operation for a chronic infection of the appendix or gall-bladder. In spite of this, it is probably best to remove such infected organs, always remembering that the surgical technic should be of the best and the postoperative treatment should be careful and painstaking.

Recently, I was called in consultation in a case of chronic arthritis in a woman of 60 years. Her teeth had been extracted years before the arthritis developed. Her tonsils were completely atrophied. The nose and throat were reported negative by a competent specialist. Her appendix and gall-bladder alone were suspicious both thru history and examination. Because of the active and progressive type of arthritis she had, we advised an abdominal exploratory and an infected appendix was removed. It is now six months since the operation and the arthritis has definitely subsided.

The role of protein sensitization in producing congestion, engorgement, and consequent infection of the tissues of the nose, accessory sinuses and gastrointestinal tract must constantly be kept in mind. There is no question but what much nasal surgery of years past will be obviated with proper use of desensitization to pollen, animal hair, food or bacteria. Such cases should be observed by a nose specialist as well as an internist interested in protein sensitization, both of whom are alive to the possibilities and pitfalls of this new phase of diagnosis and treatment.

Removal of foci of infection in other areas of the body, such as the stomach, pelvis, colon and bronchial tract must be as complete as possible and must be left to wise surgical and medical treatment. Unfortunately, lymphatic gland and contiguous tissue involvement is often so extensive that final control of the infection must be dependent on general supportive and constitutional measures. Among these there seem to be developing possibilities of biologic and bactericidal benefit in certain x-ray and ultra-violet ray therapeutics which I am following with interest.

FOCAL INFECTION

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The principles of focal infection have been accepted and applied to the treatment of numerous diseases, such as acute and chronic arthritis, myalgia, neuritis, cardiac diseases, ulcer, cholecystitis, certain acute and chronic nephritides, etc. Recently, Rosenow and his coworkers have demonstrated the application of the focal infection theory to pyelonephritis, nephrolithiasis, poliomyelitis and epidemic encephalitis, and have reproduced these conditions in animals.

That the organisms from such foci as tonsils, teeth and sinuses may have selective localization properties, when they have once entered the blood stream, is probably the most far-reaching conception that has been introduced into clinical medicine in the past twenty-five years. In the application of such a fundamental conception to the art of medicine, many difficulties will be encountered, failures will be common, and "faith in the idea" will be strained. Since evaluation of the various infection factors is still uncertain, since surgical technic has not yet been so developed as to make our clinical experiments perfect, and since the therapeutic limitations have not been fixed, it seemed that a brief discussion of the application of the theory of focal infection to some incompletely understood disease-complexes common to the day's work might be of interest. I shall sketch several such "clinical experiments," and discuss some principles that seem essential in the application of the focal infection idea, incidentally calling your attention to a technic for removal of dental foci.

THE NEURASTHENIA-FAG TYPE

Case 1. Dr. X. suffered from a neuritis of the musculocutaneous nerve of the right leg which had bothered him off and on for several years, from fag, insomnia, and mental depression. His weakness and depression had become so severe that he was unable to work and had resorted to one-half to one grain of morphine daily to combat his state of utter hopelessness.

A complete examination, including Wassermann, revealed nothing but a poorly nourished, worn out man with a neuritis of the right musculocutaneous nerve, and an extensive infection of both alveolar processes.

The morphine was taken away gradually and the patient put on a hospital regime for ten days without material improvement. The mouth pathology was then removed by the operation to be described later. In six weeks he had gained twenty pounds in weight, had nearly lost his neuritis, and stated that he felt better than he had in years. The patient's health was reported to be excellent after four and one-half years.

Comment. This case shows focal infection as a factor in producing neuritis, physical incapacity and mental depression amounting to a psychosis. In our records is a case of toxic psychosis with hallucinations, that had been under a hospital regime for eight weeks without improvement. The mental condition began to clear almost immediately after the removal of an extensive mouth infection.

Case 2. W. C., aged 38, complained of weakness, fag, inability to work, abdominal discomfort with gas, shortness of breath, and palpitation. He stated that he suffered from "drawing sensations all over the body," nervousness and sleeplesness, and that he had recently spent five weeks in a sanitarium without benefit.

Physical examination revealed nothing of importance except tonsils from which caseous material could be expressed, and three teeth with small dentoalveolar abscesses. He was of the eunuchoid type. The blood count gave 5,100,000 reds, 6,000 whites, and the hemoglobin, 87 per cent. The Wassermann test was negative. An examination of the stomach contents, stool, and urine revealed nothing abnormal. Roentgenologic examinations of the chest and gastrointestinal tract were negative.

The mouth pathology was removed on the seventh day in the hospital, the tonsils on the nineteenth. No improvement had taken place up to the time of the tonsillectomy, following which improvement was rapid, with a gain of twelve pounds in weight in four weeks. The patient reported at the end of five years that he felt well, and that he had needed no other treatment, although his strength was not all that could be desired.

Comment. The presumptive diagnosis in this case was neurasthenia. The patient was quite typical of this class, both in appearance (Stiller type), and in the indefiniteness of his complaints. Removal of foci of infection enabled this man to work and to enjoy reasonably good health.

It has seemed to us that the conception of the excess load might be justly applied to focal infections in neurasthemics. The constitutionally and temperamentally deficient have a much harder struggle with their environment than the physically and mentally fit. Add to their fixed handicap the extra load of a focus of infection and the scale is more apt to turn against them. The removal of the extra load and the concentration on their environmental problems of energy previously dissipated in combating removable infection may determine success as against failure in life. The neurotic is a problem that will not down and any means that will help him to compensate his neurosis is worth while. We have records of a considerable number of "decompensated" neurotics who have been very materially helped by the removal of buccal and tonsillar infections.

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* Read before the Thirtieth Annual Meeting of Idaho State Medical Association, Wallace, Idaho, July 10-11, 1922.

HYPERTENSION. CHRONIC INTERSTITIAL NEPHRITIS

Case 3. J. H. S., aged 45, complained of swelling of both limbs, polyuria, shortness of breath and fatigue.

The points noted on examination were a moderate cardiac enlargement, a markedly accentuated aortic second sound, systolic blood pressure of 184, diastolic 80. There was edema of both feet. The urine had a specific gravity of 1015, contained 2 pro mille albumin, and no sugar. Hyalin casts, some kidney debris, and blood cells were present. The tonsils were enlarged and contained pus. The teeth showed numerous dentoalveolar abscesses.

The patient's condition began to improve immediately on removal of the infections. Two months later the urine still showed evidence of nephritis but the blood pressure was normal. Four and one-half years later the urine was normal, the heart sounds were normal and the patient was doing unusually hard farm work.

Comment. The high blood pressure, the cardiac signs, the polyuria, and the urinary findings, all fitted into the picture of chronic interstitial nephritis. Complete recovery from this syndrome, which is not usually seen under orthodox methods of treatment, is of interest. We do not maintain that the focal infections were the sole cause of the trouble but the sharp change in the patient's condition and the end result, following the removal of these infections, supports the contention that they were a factor of prime importance. The return to and continuance of a normal blood pressure is noteworthy, for hypertension as a symptom is much more fundamental than albumin and casts.

From our experience, infections have seemed be *one of the tangible factors entering into the production of hypertension.* We have seen appreciable drops in blood pressure and improvement in symptoms follow the removal of focal infections, when the results of previous dietetic and hygienic treatment had been little satisfactory. In hypertension cases, where the heart was flagging under the load of a high blood pressure, the removal of infected tonsils or extensive alveolar disease has occasionally assisted in stabilizing the circulation.

VERTIGO

Case 4. Mrs. R. R., age 49, complained of dizziness and weakness. The dizziness had been so severe that she had sat up very little in the previous eight months and had needed help when attempting to walk. She had been badly constipated and her appetite had been poor.

The patient was a poorly nourished, middle-aged woman. The tonsils were buried and septic. The left tonsil had an injected anterior pillar and was edematous. The submaxillary lymph glands were enlarged. The heart and lungs were normal; the abdomen was flabby, and diffusely tender in the right hypogastric region. The cecum was distended. The deep and superficial reflexes and sensations were normal. There was no nystagmus, and there were no auditory symptoms. The pelvis was normal. The blood showed 80 per cent hemoglobin, 4,300,00 reds, 14,000 leukocytes, with 74 per cent polynuclears. The Wassermann test was negative. A test meal showed a total acidity of 47, free HCl 25, and combined HCl 11. The stool examination was negative.

Films of the teeth showed extensive disease of both alveolar processes. A roentgenologic examination of the gastrointestinal tract revealed nothing of importance except a somewhat tender retrocecal appendix and delayed colon motility.

The patient was subjected to a hospital anticonstipation regime. At the end of ten days the colon function was normal, but without appreciable improvement in the dizziness. Alveolectomy was then performed with complete removal of the mouth pathology. No improvement resulted. Two weeks later the tonsils were removed. Within a week the dizziness had largely disappeared. Three weeks later the patient was discharged from the hospital with complete recovery from the vertigo. The leukocyte count had dropped from 14,000 to 6,500.

This clinical experiment would seem reasonably well controlled and conclusive as far as such an experiment can go. No suggestions were given to the patient. The procedures were merely carried out. The reaction of the vertigo to the tonsillectomy was sharp. We have records of eight cases of severe vertigo, in which the results of the experiment (tonsillectomy) have been good. In one case, removal of mouth pathology was followed by cessation of vertigo. A Menier's syndome was very much improved, both in severity and in frequency of attacks, by removal of extensive mouth disease. Failures, when successes might be anticipated, will occur from incorrect analyses of the etiology and from permanent changes having already taken place in the vestibular apparatus.

One case of failure which illustrates this point had, in addition to badly infected tonsils, a syphilitic aortitis and hypertension (systolic blood pressure 210). All possible causes of vertigo should be canvassed before essaying the focal infection experiment. Obviously, cases of vertigo in otosclerosis, hypertension, arteriosclerosis, severe secondary or primary anemias, intracranial diseases, etc., are not promising material.

Shambaugh* has written on primary diseases of the labyrinth as the result of focal infection. He logically inferred a neuritis of the vestibular nerve from tonsil infection because of the known predilection of focal infection for single nerves. In the absence of experimental work with organisms grown from the tonsils, or of autopsy investigations which would naturally be a remote and difficult possibility, all conclusions in regard to the pathology of the condition must be speculative.

Extensive removal of teeth for focal infection has been much criticized of late, but such criticism fails, if cases receive the detailed study and thought which is their due. Teeth and tonsils must occasionally be sacrificed to no purpose, just as elsewhere justifiable surgical procedures come to naught, but, if the indications are weighed with the same care that is wont to be given to laparotomies, the number of bootless removals will be limited.

In the study of these cases, two fundamental reasons for the removal of a focus should be kept in mind: (1) the closure of a door of entrance into the circulation for infecting microorganisms and their toxins, and (2) the removal of a useless load which the system is compelled to carry. The load factor has not been sufficiently stressed. The energy required to keep an infection under control, destroy toxins and repair damage must be subtracted from the sum total of available energy. Therefore, the focus must be considered, not as the sole cause of disease, but as one factor or one condition participating in the production of that "peculiar abnormal course of the same processes which make up the life phenomena of healthy individuals."

It might be well to adopt a dynamic viewpoint in studying disease and to conceive of certain diseases as resultants of several forces. It is comparable to the dynamics of chemical reactions involving several substances. One views disease too often from a fixed point, one assumes a single etiology and a single explanation for what may be the result of several forces. If pathology is the result of an effort at adaptation to unfavorable internal or external conditions, there can be no reason why the system may not be adapting itself to several different conditions or forces at the same time. In other words, what we designate as a disease may be *the resultant of the effort at adaptation, not to a single but to several forces.* Typhoid fever illustrates the former group and the morbid states associated with senescence, the latter. It is quite apparent that efforts at adaptation to noxious agents, no matter how trivial, demand energy. It is the consciousness of this dissipation of energy that often brings the patient to the doctor, complaining of pain or of impaired functioning of the organisms as a whole or in part.

In our opinion, the existence of foci of infection may be passed over when the patient's life phenomena are normal, when he feels well, and when his energy is at par, but when he has lost his "pep" and his life processes run wrong, in the absence of a tangible, workable etiology, we should advise the removal of evident foci of infection if for no other reason than that the patient be given the advantage of a lighter load. The extra load of a focal infection should not be underestimated, even in combating disease of known etiology. We have repeatedly been impressed by the acceleration of antiluetic cures by removal of the additional load put on the patient by diseased tonsils or teeth.

Deductions from clinical experiments are notoriously fallacious. Several methods of therapy are usually applied simultaneously and sufficient credit is not allotted to rest, change of scene and better hygiene. In our efforts to determine the value of the removal of infections as a therapeutic procedure we have endeavored to stabilize environmental and other therapeutic conditions before attacking the focus. We have tried to determine the norm of the patient under the conditions of the experiment before the experiment was carried out. The patients have nearly always been subjected for a time to a fixed hospital regime before operation.

The technic of the clinical experiment is another variable that must be accurately controlled. For a satisfactory experiment, the technic must be adequate. The technic of tonsillectomy has been perfected. Those of nasal and buccal infections are yet deficient. We wish to present as a corrollary to this paper, a technic that satisfies the demands of a satisfactory experiment for the removal of alveolar infection.

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* Shambaugh, Geo. E., M.D. Primary Diseases of the Labyrinth as the Result of Focal Infections. Ann. Otol., Rhin., and Laryng. Vol. XXVI. Sept., 1917.

This technic of external alveolectomy was applied seventeen years ago by Dr. Wm. L. Shearer, of Omaha, with whom we have been closely associated in our work on buccal infections, to the superior maxilla for cosmetic purposes, because it facilitated the fitting of pleasing dentures in cases where the upper jaw was unduly prominent. In attempts at removal of infection with a curette, we were early impressed with the uncertainty of the "working in the dark" method and with the prolonged suppuration and retarded healing of the curetted sockets. Removal of the external alveolar plate after thoro curettement convinced us of the unlikelihood of complete removal of extensive infections by the curette.

Therefore, the operation of alveolectomy was applied as a routine procedure in infections of the alveolar processes in the following manner: The teeth are removed, the mucoperiosteum is dissected up to the root ends of the teeth, the external alveolar plate is taken off, then the diseased tissue is attended to under the eye, the bone smoothed down, and the lingual and buccal gingival mucosae trimmed and sutured with horse hair. Healing, much to our surprise, has been almost entirely by primary union, febrile reactions have been practically eliminated, and the greater comfort of the patients following this procedure has been almost unbelievable. Furthermore, the technic permits of the clearing up of an entire alveolar process at one sitting without fear of postoperative reaction.

Failures to obtain desired therapeutic results must of necessity be many, tho such failures do not invalidate the theory. So many variables enter into the count that it is surprising that we come off as well as we do in the present defective state of our knowledge. We must often choose one focus for attack from the several which exist, and we never can be sure that we are selecting the right one. We cannot be at all sure of complete removal of the focus except in the case of tonsils. Standardized technics for complete removal of sinus and mouth pathology are yet to come. Secondary foci can always function as primary; e. g., a latent gall-bladder or an infected joint. Finally, when we have destroyed the primary focus, we have only eliminated the source from which reinforcements are drawn; the army of invasion is still to be destroyed by the defenses of the patient. It is a game in which the patient must take his chances. In many instances I am accustomed to advise the removal of foci as a justifiable experiment, explaining to the patient the alternatives and the uncertainties, and putting it up to him as to whether he will gamble or no.

CONCLUSIONS

1. The principles of focal infection are loosely applicable to such conditions as neurasthenia, fag, hypertension and vertigo.
2. The excess load factor has not been sufficiently emphasized in our conceptions of focal infection.
3. Effort should be made to so control our therapeutic applications of the principles of focal infection that they conform to valid experimental procedure.
4. In removal of buccal infections external alveolectomy is the technic of choice.

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PAIN IN AND REFERRED FROM THE SACROILIAC JOINT*

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The subject of sacroiliac pain, its cause and treatment, is one which until recent years has been more or less ignored by the medical profession, and I am sorry to say has been partially appropriated by the oesteopath, chiropractor, etc. If there is any thing of note in the medical textbooks on the subject I have failed to find it. Of late industrial medicine has begun to recognize this condition and from time to time the journals are devoting some space to it.

In the year 1921, under the State of Washington Department of Labor and Industries, there were reported 449 injuries about the back, hips, pelvis, vertebra and abdomen classed as sprains, with an average of 66.5 days lost. I should like to quote from a letter from the chief medical adviser of the department:

"It has been only just the last little while that we have been running sacroiliac injuries separate from back injuries. Consequently you will notice in the statistics furnished that the number of back injuries are large, and the majority of those shown under the caption of back injuries are sacroiliacs. I think I would be perfectly safe in saying the 75 per cent of the back injuries seen here have a sacroiliac involvement sooner or later. A lot of them complain of a generalized pain for a few days or weeks, but it soon localizes in the sacroiliac joint. Of course a large number have their sacroiliac symptoms predominating from the instant of injury."

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* Read before the Thirty-third Annual Meeting of Washington State Medical Association, Tacoma, Wash., Sept. 6-7, 1922.

If 75 per cent of the injuries classed as sprains of the back are sacroiliacs, there were in 1921 a total of 209 cases with sacroiliac involvment instead of nine which were classed as such. This makes an average days lost of 80.6, at a total compensation of $12,262.50. The total compensation for all injuries classed as sprains was $47,705.72. It will be seen from these figures that practically one-fourth of this amount was charged to sacroiliac injuries. With the exception of sprained ankle, which paid a compensation amounting to $8,665.97, sacroiliac conditions paid twice the compensation of all other injuries.

Before entering into the discussion of the diagnosis and treatment of these conditions, I should like to recall a case which, more extreme than the average, will place in your minds the more severe type and one that would often be overlooked.

W. G., age 40, weight 160 lbs. On May 6, 1921, while removing a lathe, slipped and twisted his back. Immediately he complained of pain in his back in the region of the sacroiliac joint and soon afterward developed a sciatica. He was treated for this condition by various methods, medicine, bake oven, electricity, hot bath, etc. With all this treatment he had become steadily worse, becoming more hyperesthetic and then was referred to a neurologist. Finally he received some injections into the nerve with no relief.

On Dec. 1 he came into my office, his wife on one side and a cane on the other, and with the appearance of a sick man. He sat down and between spells of crying he gave the history I have told you. This was seven months after the injury.

On examination his right leg was one-half inch shorter than the left, which satisfied me that the condition was one of sacroiliac involvement. Owing to his inability to relax he was taken to the hospital and given an anesthetic and the subluxation reduced.

That night he slept without an opiate for the first time in weeks, and in the morning he walked to the bathroom without help. Two days later he returned to his home in Seattle, and three weeks later I received a letter from him, stating he had returned to work.

With this case in mind we shall pass on to the diagnosis and treatment of these cases. For the purpose of this paper it is unnecessary to go into the anatomy of the joint other than to recall your attention to it in a brief way. The sacroiliac joint is an amphidiarthrodial joint, the articular surfaces being comparatively small. The joint has somewhat of a key-stone formation and is strongly bound together with ligaments. The position of the joint is indicated by posterior superior spine of the ilium, which process is immediately behind the center of the articulation. The sacral and pudendal plexuses are formed about this articulation and supply the pelvis, the generative organs and the legs.

The sacroiliac patient comes into the office with a history of getting overheated, then chilled and, when making a quick movement, has got what he calls a crick in his back. Again he tells of cranking a ford, of something catching him, of lifting something and feeling something let go in his back, of falling, slipping, etc., with the net result that he has a backache.

He has his diagnosis ready. It may be lumbago, sciatica, rheumatism, kidney trouble, etc., and too many times he is giving you the diagnosis the various physicians have given him as he hunted for relief. He has reached the point in his efforts for relief that his belief in the medical profession is on the wane and, unless you can do something for him, he will soon drift to the osteopath or chiropractor. If he gets there, he often finds relief and from then on he believes that they can treat anything.

The cause of sacroiliac pain is due to the ilium slipping on the sacrum, thus causing tention or pressure on the various nerves. The most common slip is posterior and downward, this accounting for about 75 per cent of the cases. Anterior and upward accounts for about 20 per cent, and the posterior and upward, anterior and downward for about 5 per cent. Some of these cases I feel sure immediately replace themselves and all we get is a muscle spasm which is relieved by any relaxing methods.

From a slight knowledge of the anatomy it is very easy to see what a varied number of symptoms may be produced from a sacroiliac subluxation. It has been my experience that the degree of slip has nothing to do with the severity of the symptoms, the impingement of the nerves being the causative factor.

If you have a patient with pain in or referred from the sacroiliac joint, a few measurements will either confirm or eliminate subluxation of the joint as a cause of the pain. Have your patient lay flat on a table and relax, flex the legs and thighs on the abdomen and rotate a few times to relax the muscles, draw the legs down and grasp the instep of each foot with the thumb on the internal maleous. Do they come into apposition or is one below the other? The difference may be from one-fourth to one and one-half inches. If the affected side is longer, the slip has been posterior and downward. If shorter, the slip has been anterior and upward.

Now have the patient turn over, lying on the abdomen. Palpate the sacroiliac joint and locate the pain points. You will find that pressure will elicite pain on the affected side, even tho the pain complained of may be elsewhere. Measure the distance between the posterior superior spine of the ilium and the center of the sacrum. This should be about one and one-fourth inches and will vary slightly, regardless of the age and size of the patient. If the affected side measures more than one and one-fourth inches, the slip is posterior and downward, and the leg on that side will be longer. If it measures less than one and one-fourth inches, the slip is anterior and upward, and the leg on that side will be shorter. There may be various combinations of these positions or one side may be up and the other down. Other measurements may be made to confirm this, as from mid sternum to the superior anterior spine of the ilium, etc.

To sum up these measurements again. If the affected leg is longer and the sacroiliac space measures more than one and one-fourth inches, the slip is posterior and downward; if the affected leg is shorter and the space measures less than one and one-fourth inches the slip is anterior and upward. Do not forget that one side may be up and the other down.

There are a few signs which will lead you on the right track in suspecting this condition. Notice how the patient sits down and gets up. Does he sit sideways? Throw something on the floor and have him pick it up. Does he stoop or squat, and does he get up like an ad. for Doan's kidney pills? Does he walk with a list? Is one hip apparently higher than the other?

The x-ray as an aid to the diagnosis of this conditions is of very little value other than to show a compensatory curvature of the lumbar vertebrae. There are two reasons for this. It is almost impossible to get the pelvis exactly flat against the plate and the superimposed shadows make its reading almost impossible. I have had several plates that I thought were of value to me, but the measurements were much more so.

TREATMENT

As the condition found is mechanical, the reduction of the same is one of mechanics. There are several methods of reducing these subluxations. Sometimes one will work, sometimes another and often the combination of all. I will give the two that seem to work best in my hands. Some of you may have something better than either; if so, I should be glad to have it brought out in the discussion.

Place the patient on a hard flat table, lying on his back. When the innominate is posterior and downward, stand on the affected side, place your fist or a book under the ilium and with the other hand flex the leg and thigh on the abdomen and rotate outward and downward. When the muscles are relaxed bring the leg downward with considerable force. In this manner the weight of the body will help to force the ilium back into place. Another way to reduce this subluxation is to place the patient on his abdomen, stand on the opposite side from the injury and lifting the leg of the affected side rotate until parts are relaxed and then with the other hand over the rim of the ilium with the leg lifted give it a quick jolt and oftentimes it will slip into place.

When the innominate is subluxated anteriorly, have the patient on his back as close to the edge of the table as possible. Stand on the side you wish to treat, grasp the ankle and flex the leg slightly on the abdomen, rotate outward and downward, bringing the leg down over the side of the table. After making several rotations, give the leg a quick pull in the direction of the floor. Very often, when the ilium slips into place, you will hear a distinct click or a tearing sound and if so you may rest assured that you have the parts in position and your measurements will be normal.

Another way to reduce these subluxations is to have the patient on his well side, the affected leg being well drawn toward the chin. Place one hand over the ilium and the other over the ischium. If the position is posterior, push on the ilium and pull on the ischium; if anterior, make the opposite manipulations. Oftentimes just riding the ilium forward and backward in this position will give you the result.

I have found that strapping these cases, after the parts have been returned to the proper position, gives the patient support and keeps the ilium from slipping out again. One thing should be remembered in strapping. If the position has been posterior, strap across the back and well down over the trochanters; if anterior, either do not strap at all or strap across the front.

I will present to you a few cases to show what varied symptoms are complained of, the diagnosis and the result of treatment.

Mr. C. F., age 30, merchant. Had complained of rheumatism in the right hip for the past five years and had been treated for such. Pain not steady, always worse after doing any work or walking far.

Examination showed the right leg one-half inch longer than the left and the sacroiliac measurements one and three-quarters inches. Severe pain on deep pressure in the sacroiliac space. The patient was able to fully relax without any effort and the subluxation was reduced at one treatment.

The relief was immediate. One week after the treatment his back was measured and found to be normal. Has felt no pain since the first treatment.

Mr. D., age 52, druggist. Three years before had had a chair pulled out from under him, and he suddenly sat on the floor. Pain immediately in left side of back and leg; was laid up in bed for several months. This patient has diabetes and this, together with the pain in his leg which had been diagnosed as sciatica, had gradually taken him down so that he was forced to give up his business. He was very nervous, had been taking morphine at night for some time.

After several months of treatment in Spokane, his home, he had gone to Mayo Clinic and they recommended an operation to relieve the pain in the testicle and groin. This he would not stand for and took a trip to Honolulu for his health. He had been to all kinds of specialists without any help. When he was referred to me his weight was 98 lbs. He could not sit straight in a chair without an air cushion. The jar of an automobile was impossible.

On measurement the sacroiliac measurement was one and three-fourths inches, but the leg on the affected side was nearly one inch shorter. This meant that the slip was posterior and upward. This patient was treated three times before the parts returned to their proper position. However, the pain was greatly relieved after the first treatment. At the end of the week he was sleeping without an opiate and was able to sit and ride in a car.

Mrs. D., age 22, married, seven months pregnant. Complained of pain over the sacroiliac joint. Could walk with difficulty, and could not do any of her housework. Examination showed the sacroiliac measurement one and one-half inches longer on the affected side. The parts went into place very easily but would not stay until strapped.

Mr. M., age 45, real estate dealer. Complained of severe pain in left hip and thigh on examination. Left leg shorter and sacroiliac measurements three-fourths of an inch. Also a herpes from center of sacrum over left hip. First treatment relieved the pain somewhat. Next day herpes was disappearing but the pain returned worse than ever. Two more treatments relieved the acute pain and the third got the parts back into place and in one week he returned to work.

Mrs. W., age 30, housewife. Complained of pain and dragging in left side of abdomen with weight in pelvis and a sacral backache worse at her mentrual period. Examination showed a normal pelvis, ovaries negative, uterus in normal position and size. On inquiry she gave a history of lifting a tub of clothes and that seemed to be the beginning of the trouble. The sacroiliac measurements were one and one-half inches on the left side and one and one-fourth inches on the right side, the left leg apparently a little longer than the right. This was adjusted and the relief was immediate, with no return of the aggravation at her sick time.

The cases quoted above will give a brief idea of the varied complaints that can be associated with the sacroiliac subluxation. I have found that many cases cannot be adjusted. At least, there are many that I have been unable to adjust. There are many that I do not believe advisable to try to adjust, if they do not slip into place with one or two treatments with the parts relaxed. These are chronic cases and I believe the fibrous tissue formed about the joint makes an adjustment impossible.

In making routine examinations for this condition I have found that several cases of subluxated sacroiliacs which complained of no pain. And I don't believe it justifiable to interfere with them. However, on taking the history many of them relate an incident of some sort of injury, followed by a period of days or months of pain and gradually getting better and finally disappearing.

Specific Treatment of Hay-Fever During the Attack. In three cases of autumnal hay-fever with sensitization to short ragweed, reported by Warren T. Vaughan, Richmond, Va., (Jour. A. M. A., Jan. 27, 1923), the patient had been desensitized by the routine commonly followed, both parenteral injection and nasal installation being employed. One patient developed hay-fever in a very severe form; while two were decidedly improved but not symptom free, after the onset of the pollen season. In all three cases, symptoms cleared up almost entirly following daily subcutaneous injections of small amounts of ragweed pollen extract. A fourth patient, a boy who had developed hay-fever for the first time and had had no preventive inoculations,

COOPERATION OR COMPETITION WITH THE COUNTRY DOCTOR. A LESSON FROM EXPERIENCE*

Homer E. Rich, M.D.
VERNAL, UTAH

Many articles of recent years have been written in medical journals, magazines and the press, dealing with the physicians in group medicine, as specialist and general practitioner. As most of these articles, if not all of them, have treated the subject from the standpoint of the city, small and large, I feel that it will not be amiss to consider the same thought from the standpoint of the country practitioner.

The question always is, "How can the doctor be most efficient?" We know that in most all cities that can call themselves such, there is always a hospital or hospitals, where equipment, nursing and assistant facilities with conveniences are present.

The doctor of the city, even if he has the most unlikable personality, can not help absorb the thoughts and experiences of those of his profession with whom he comes in daily contact. In direct proportion as he realizes the the value of the other fellow's experiences, he pushes forward and grasps those things that add to his book of knowledge and make him more fitted to the claim of physcian. The city physician, as also the country doctor, reads his many magazines and reprints, but in addition has the advantages of discussion, and also of seeing the thing he reads about tried out in actual practice. In the city the doctor makes progress in spite of indifference and laziness, while progress in the country comes only thru special effort.

To be sure, any progressive physician wants to run back to a medical center at intervals, to get the new thoughts of other localities. It is for this reason that the young graduate wishes to locate in the city in order to keep up in his profession, and for the same reason the average country doctor looks forward to the time when he can sell out, specialize and move to the city. The cities are full of doctors, with some of them making a very poor existence, while many localities in the country go waiting for good medical help. People of means, living in rural communities, go to the city for expert assistance, but those of poor circumstances have to stay at home to suffer and get along as best they can with local conditions.

You will pardon my personal reference, which I have to make in order to bring out a point but, as one who received his training in a first class college, with an interneship subsequently in a first class hospital, and being used to all conveniences that are known to the modern house-man of a large well equipped institution, also having visited other localities in the country to paralell contrasts, and discussing the matter with hundreds of physicians during nine months at a medical officers training camp and thirteen more months attached to a regular army division here and overseas; and having been out in the country for twelve years to practice, with the nearest hospital one hundred and twenty miles away and most convenient hospital two hundred miles away, it puts me in a position to compare somewhat of conditions in the country as they are with what they could be.

My impression is that the average country doctor is not as efficient as he could be. To advise a means whereby he can be more so is the object of this paper. It is true there are a lot in the city who are not as efficient as they could be, but they have a better chance than their colleagues in the country.

The big cause for the large percentage of inefficiency everywhere, and particularly in the country, I believe is due to lack of cooperation. Too much selfishness and not enough foresightedness to get together. No physician can do everything better than anybody else, and most any wide awake doctor can do some one thing better than his associates. That has been the reason for the development of specialists, and for the grouping of specialists together, where they can better serve the public and thmselves as well. If this is true of the city, where they have more and better things to do with, it is even more true of the country. This is not saying that all country doctors can specialize and form groups, as they cannot do it in town of 1500 or less. The country doctor has got to be more or less a general practitioner.

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* Read before the Twenty-eighth Annual Meeting of Utah State Medical Association, Salt Lake City, Aug. 31-Sept. 2, 1922.

In order to cover the specialties they would have to all be in town all the time and have the patients come to them. As it is, with long and many calls to make, one does not know what he is going to run into until he sees his case, and then has to take care of it there in most instances, sometimes doing major operations with some inexperienced person assisting and giving the anesthetic. This has been part of my experience many times.

What the country doctors can do is to work more together, office more together, exchange case histories by daily discussion and buy differently so that two in the same town are not buying the same instruments, books or taking the same magazines. Also divide up the specialties for reading, so that one man can be looked upon by the others as covering everything in the literature that he sees on certain subjects, so that he can be informed on questions for the rest. If a trip to a medical center is taken, then that specialty can be considered more in detail by this reading pseudo-specialist, while there.

It is not necessary to form firms or partners to do all this. A doctor can keep his own expenses separate and pay for same separately, but for rent, phone, lights, etc., he can pay his share of the gross expense and have less to pay for more use on account of all buying differently. Some groups of physicians working together find it best to keep their accounts separately and refer cases to each other with the hope that the rule of averages will break even at the end of the year. The reason for this is that some are willing to do night work and take care of obsteric cases, while others in the group prefer not to do so and are willing to take the chance of doing more in their lines or take less. It has not been my experience that one has to do the confinement work in order to do the rest of the family work, as has often been made mention. People are getting away from the family doctor for everything even in the country, and where doctors are working together on friendly terms (where one will go when another has been attending the same family recently), people will call in the doctor they think best suited for the case at hand.

CONCLUSION

1. Physicians should think less of how they can compete with other doctors in the country and think more of how they can cooperate with them.

2. By so doing they all develop more, and learn to see the strong points of a colleague instead of his weak one.

3. They soon learn to ignore remarks of what the other doctors said about them. It is surprising to learn that, when the doctor quits knocking the other doctor, very soon the public quits knocking the doctor too, and you have better coöperation all thru.

4. They have larger office facilities by getting together for, while they need private rooms to themselves, they can all use in common the same reception room, operating room, recovery room, examining room, laboratory, x-ray and electric room. They have more instruments to work with for the same money, a larger library to draw information from, a better equipped laboratory, and a better electric room than any one of them could have if working alone.

The lesson from experience is this. In our town of Vernal we do what I have said could be done and know it works. Four of us have ten rooms together, a private room apiece, with a reception room, operating room, treatment and supply room, laboratory and recovery room, x-ray and electric room. We have no partnership and all do general practice, and in a sense are all competitors, but are all working together to better our efficiency. One does special reading in gynecology, one in eye, ear, nose and throat, one in orthopedics, and another in pediatrics. We discuss our cases daily and are present for office hours at the same time. All see any interesting case that may come in to any one. Last, but not least, we know each other's bad accounts, so collections are better.

We probably could improve ourselves by incorporating with a business manager and a laboratory technician who is a trained nurse. We hope soon to have these but circumstances will not allow them at the present. The thought I wish to drive home is that physicians in the country can better themselves, and better serve the people by working more together. What we have done in Vernal others can do, and be surprised to find how easy it works out.

NORTHWEST MEDICINE
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EDITORIAL

A FEDERAL DEPARTMENT OF HEALTH

For several years a Federal Department of Health has been under discussion, earnestly advocated by some and vigorously opposed by others who have declared that the increase of federal departments was to be deplored. The experiences of the late war have brought to light many of the defects of the national administrative system and have magnified the advantages and the benefits to be derived from government supervision of certain phases of national health.

At a recent health conference in Washington, D.C., Postmaster General, Dr. Hubert A. Work, emphasized the fact that problems affecting the public health and education along these lines are matters to be controlled by the separate states, but their coordination and regulation for the benefit of the whole country can be achieved only by the federal government. It is proposed to establish a Department of Education, Health and Welfare, with a secretary in the cabinet, with four bureaus of education, health, welfare and the veterans' bureau. It is planned to transfer to this new department all the existing activities of the federal government along these lines, including the U. S. Public Health Service. The present organizations and the personnels of these various bureaus will be absorbed as now established.

This department would have control of maritime quarantine, as well as interstate quarantine measures to prevent the spread of diseases from state to state. It would study the large problems causing ill health in various sections of the country. Conferences of state and local officials would help the solution of these problems and bring them to the attention of the public. It will not be the purpose of this department of the federal government to interfer in any way with the existing health functions of the different states, with the treatment of diseases nor the regulation of the practice of the healing art, as existing in the different states.

An objection to this department has been that it would build up a great federal organization, while in reality it will simplify the federal bureaus by consolidation and getting rid of the duplication now existing in Washington. It would effect a decrease in expense and an increase in the efficiency of these various bureaus. It is desired that this matter shall be brought to the attention of the various state medical organizations, as well as to the public press, that it may be properly considered and a favorable public opinion be created in its behalf. This is an entirely non-partisan movement which has the approval of the present administration, as it had of the last three. It is a beneficial movement which should be put upon the statute books of the country.

HEALTH MEASURES BEFORE WASHINGTON LEGISLATURE

Health measures presented to the Washington Legislature will receive fair treatment, if the vote of the Senate on Senate Bill 37 can be taken as a criterion. By the terms of this measure "counter" prescribing by druggists in connection with the venereal diseases is prohibited, and remedies can be dispensed only thru the prescription of a regularly licensed physician. Refilling of prescriptions is denied under one section of the act. This bill, characterized by Senator Landon as a creature of the "medical trust," sailed smoothly thru the Senate January 26, with only two dissenting votes.

Sponsored by the Federation of Women's clubs, and introduced by Karshner, one of the two medical members of the upper house, the arguments in behalf of the measure were interesting. Dr. Karshner in his argument pointed out the evils of careless and inefficient prescribing by druggists for these diseases, and referred to the proposed legislation as the blue sky law of health. Karshner's colleague, the veteran Dr. McCauley, of Ellensburg, supported the measure in a strong and telling manner. He recited instances wherein venereal diseases not properly diagnosed and cared for had caused untold misery. Hasting of King, Cleary of Whatcom, Grass of King, and others, gave their endorsement of the bill. The only talk in opposition came from the husky senator from King, who said the bill would serve no useful purpose, and that it would merely bring additional emoluments to the medical men of the state.

Another measure of some interest to the medical profession is House Bill No. 3, known as the

Beeler Antinarcotic Bill. In general this pending legislation increases present state penalties for narcotic violations and in effect creates new enforcement agencies. This bill was amended in the house, making the right to prescribe narcotic drugs an exclusive one to physicians licensed to practice medicine and surgery. As originally drafted the possibility of extending this authority to osteopaths was apparent.

Another amendment of interest to the medical fraternity was one offered by a member of the house committee on medicine, dentistry, pure food and drugs. This proposal provided that a physician in prescribing narcotic drugs must state "the nature of the ailment." It has been suggested that this particular amendment, which was finally incorporated in the bill by house action, makes it necessary for physicians to state specifically the particular disease treated. In all probability the bill will be changed in the senate and the questionable phraseology modified.

One of the bills attracting general attention at Olympia is Senate Bill 32, an act defining and regulating the practice of dentistry. This measure is sponsored by the Department of Licenses and is largely supported by the ethical dentists of the state. The so-called "advertising" dentists are waging a bitter fight against the bill and temporarily, at least, have made some headway. Section 20 of the act is particularly assailed. It provides that no person or persons practicing the profession can hide behind any smoke screen, using "the name of any company, association, corporation, trade name or business name," and that "any person or persons practicing or advertising as practicing dentistry or dental surgery shall practice and advertise to practice under his or their own proper name." This particular section has brought a swarm of lobbyists to the state capital, and the fight being waged is warm and bitter. The bill remains for the present in the senate committee. It is uncertain when that committee will report it out.

Other measures fo importance are: Senate Bill 29, licensing shopkeepers other than pharmacists who desire to sell certain medicines and poisons. This license calls for a fee of six dollars, and grants authority to sell specified medicines and poisons in originally sealed and unbroken packages; Senate Bill 31, providing for the registration of pharmacists and assistant pharmacists; House Bill 44, providing for drug label protection; House Bill 17, providing that school districts of the second class may provide milk to undernourished and indigent school children. Under the present statute this power is only given to cities of the first class.

The legislative attitude is generally favorable to measures looking toward the conservation of health. There is no disposition to lower any of the present standards; rather, the inclination is to stiffen educational requirements for those seeking to qualify under the professional acts. The five physician members of the eighteenth Washington legislature are assuming prestige and their advice on health matters is being accepted. To these five men, who have laid aside their practice for sixty days, who have been targets for political ammunition in two campaigns, and who assume this important legislative work at a great monetary loss, the medical profession owes the highest praise. May their tribe increase!

MEDICAL LEGISLATION IN OREGON

Several bills have been introduced into the Oregon legislature which have an especial interest for the physicians of that state. Senate Bill 24 has excited the greatest interest and has elicited a large amount of discussion before the Committee of Medicine, Pharmacy and Dentistry. This bill is an amendment to a paragraph of the Oregon Laws, bearing on the exemption of hospitals from taxation. This amendment would deny this exemption to hospitals or sanatoriums whose management "exercises preference or discrimination between physicians and surgeons, duly licensed as such by the State of Oregon, in the use of facilities or equipment of the institution, or exclusion from such institutions or facilities, of any physician or surgeon." This bill originated with a group of physicians in Portland who were denied the privilege of treating their patients in St. Vincent's, Good Samaritan and Emanuel Hospiatls, because they were guilty of unnecessary operations, using unethical methods and refusing to submit to hospital rules for the examination of tissues removed. This bill appears to be backed by osteopaths who introduced a similar bill two years ago, which died in committee.

This action on the part of the hospitals is in accordance with regulations recommended by the American Hospital Association. They are part of the scheme for hospital standardization, inaugurated by the American College of Surgeons. No medical man who has at heart the best interests of his profession and the promotion of the interests of the public can entertain any logical protest against these rules. Physicians so minded ought to establish their own hospitals and herd by themselves. The representatives of the governing boards of these hospitals stated before the committee that they believed in such discrimination and that they would continue such practice in the best interest of the public, whether they were taxed or not. It is believed that an adverse report will be presented by the committee.

House Bill 152 proposes a board of seven examiners to regulate the practice of Naturopathy and Drugless Therapy. A similar bill, introduced two years ago was beaten in committee. The bill provides for a two years' course of study and mentions the subjects to be covered by examination. The system is defined as "treating the human body in the prevention and removal of disease, injuries and deformities, based upon the principle that, if the causes thereof are avoided or removed, nature's forces, if properly directed will restore and maintain health." The amplification of this definition includes most of the other bizarre forms of drugless healing which have been licensed in other states. The Association of the Naturopaths is said to be well supplied with funds and is planning a vigorous fight for the passage of the bill.

THE A. M. A. MEETING IN SAN FRANCISCO

All physicians on the Pacific coast will be personally interested in the meeting of the American Medical Association which will be held in San Francisco, June 25-29. The rare occasions when this great meeting is held on this coast are opportunities for attendance on the part of those who find it difficult to make a trip to the Atlantic coast for that purpose. The San Francisco committee of arrangements extends a welcome to all physicians with their families and friends.

Those planning to attend the meeting are requested to write Dr. W. E. Musgrave, 306 Balboa Building, San Francisco, Chairman of the committee of arrangements, who will supply any information regarding any subject whatsoever pertaining to this meeting. To every one who wishes to spend a short or a long time in that or any other part of California, the committee stands ready to extend aid for this or any other purpose. California residents are all famous as boosters, and they do not propose to fall down on this occasion. All the delightful attractions of the state will be offered to visitors.

PROGRAM OF THE JUNE SEATTLE MEETING

The committee in charge of the meeting of the Pacific Northwest Medical Association, to be held in Seattle, June 19-21, presents the following attractive program, which has never been surpassed for a medical meeting in this section of the country. There will be additions to this list of speakers, whose names will be announced in the future. It is proposed to have a general meeting each of the three mornings, at a central meeting point. In the afternoons and evenings there will be sections in medicine, surgery, urology and other special lines. All meeting places will be located within two or three blocks of each other, thus concentrating all sections of the meetings. At the close of the meeting it is proposed to secure a special boat or train which will carry the members and visitors to the meeting of the A. M. A. in San Francisco. A very large attendance is anticipated for this meeting.

PROGRAM

Dr. Oliver S. Ormsby, of the Presbyterian Hospital and Rush Medical College, will present a lantern slide lecture on "Syphilis, Cutaneous Lesions, Diagnosis and Treatment," and a second paper on "The Diagnosis and Treatment of Parasitic Diseases of the Skin."

Dr. Evarts A. Graham, Professor of Surgery, Washington University, will present two lectures "A Consideration of the Pathogenesis of Cholecystitis and its Complications," and a second paper will be by Doctors Graham and Duff S. Allen, Intracardiac Surgery."

Dr. Peter Bassoe, Rush Medical College, will present a paper on "Skeletal Lesions Causing Spinal Cord Symptoms." Neurologic Phase.

Dr. D. B. Phemister, Rush Medical College will present a paper on "Skeletal Lesions Causing Spinal Cord Symptoms." Surgical Phase.

Dr. H. Gideon Wells will speak on "The Present Status of the Cancer Problem," and on one or two other subjects. Dr. Wells is Professor of Pathology at the University of Chicago and Director of the Sprague Memorial Institute.

Dr. Warfield T. Longcope, of the Johns-Hopkins Hospital and Medical School, will present "Certain Phases of Protein Sensitization," and a second lecture will be presented on "Practical Value of Functional Tests for Kidney Efficiency in the Diagnosis, Prognosis and Treatment of Nephritis."

Dr. R. T. Woodyatt, of the Presbyterian Hospital and Rush Medical College, who was to have given one of the principal medical lectures last year, will present two communications on "Diabetes." It is hoped that he will be able to give us his experiences with Insulin.

Dr. Dean De Witt Lewis, of the Presbyterian Hospital and Rush Medical College, will present two papers on "The Treatment of Fractures and their Complications," and "Lesions of the Breast, the Diagnosis and Treatment."

Dr. Channing Frothingham, of Peter Bent Brigham Hospital and Harvard Medical School, will discuss "Abnormalities in Cardiac Rate and Rhythm and their Treatment." He will also give us a paper on "Visceral Syphilis," which will be presented in conjunction with that of Dr. Ormsby.

Dr. Carl Hedblom, of the Mayo Clinic, will present "Chronic Empyema, Conclusions Drawn from the Study of 325 Cases," and a second paper on "The Treatment of Chronic Non-tuberculous Pulmonary Suppuration."

Dr. Francis W. Peabody, of the Boston City Hospital and Harvard Medical School, will discuss "Clinical Significance of the Vital Capacity of the Lungs." This paper will take up the bearing of these determinations on the diagnosis and prognosis of pulmonary and cardiac diseases, and the pathologic physiology will be discussed. A second paper on "Cardiac Neurosis." A discussion of a group of cases which assumed great prominence during the war but which have their exact counterpart in civil practice. Etiology, diagnosis, and treatment of so-called functional heart disease.

Dr. A. J. Carlson, Professor of Physiology at the University of Chicago, will present three important fundamental lectures; the first, "Some Practical Problems in the Physiology of the Alimentary Tract," the second, "Studies on the Visceral Sensory Nervous System," and the third, "The Present Status of Organotherapy."

Dr. Walter Timme, of New York City, will present some neurological subject, as yet unannounced.

Dr. E. E. Irons, of the Presbyterian Hospital and Rush Medical College, will present, "Chronic Infections as a Cause of Invalidism."

Dr. Gordon B. New, of the Mayo Clinic, will present a paper on "Actinomycosis of the Head and Neck," reporting one hundred cases. He will also give a lantern slide demonstration on "Plastic Surgery of the Face and Neck."

Dr. H. F. Helmholz, of the Mayo Clinic, will present two papers, one on "Asthmatic Bronchitis in Childhood," and a second on "Pyelitis in Children."

Dr. George E. Shambaugh, of the Presbyterian Hospital and Rush Medical College, will present some otological subject, as yet unannounced.

Dr. A. Sachs, of Omaha, Nebraska, will give a medical paper on an unannounced subject.

Dr. Julius H. Hess of Michael Reese Hospital and University of Illinois, will present a lecture on some Pediatric subject.

Dr. W. W. Duke, of Kansas City, Missouri, will present a paper on "Food Allergy as a Cause of Abdominal Pain." Dr. Duke's work on the various phases of hypersensitiveness and on hemorrhagic diseases are well known.

NEW ADVERTISEMENTS

The attention of readers is called to the following new advertisements appearing in this issue. The Medical Protective Co., of Fort Wayne, Ind., (page 27) has long been known for its defense against malpractice suits. The Portland Medical Hospital, of Portland, appears on page 75. Novarsenobenzol Billon is presented by Powers-Wrightman-Rosengarten Co. (page 31). National Bay State Shoe Company offers a sale of shoes (page 9 . Fisher Flouring Mills Company (page 6) presents its breakfast cereal, Toasted Rolled Oats. Physicians' Directory is inaugurated on page 25. This is recognized and followed by state association journals as an ethical means of presenting one's special line of practice to the consideration of one's fellow practitioners.

MEDICAL NOTES

CONGRESS ON INTERNAL MEDICINE

The Seventh Annual Clinical Session of the American Congress on Internal Medicine will be held in the amphitheaters, wards and laboratories of the various institutions concerned with medical teaching, at Philadelphia, Pa., beginning Monday, April 2, 1923. Practitioners and laboratory workers interested in the progress of scientific, clinical and research medicine are invited to take advantage of the opportunities afforded by this session. Address inquiries to the secretary, Dr. Frank Smithies, 1002 N. Dearborn St., Chicago, Ill.

OREGON

Dedication of Mackenzie Hall. The exercises attending the dedication of Mackenzie Hall, of the University of Oregon Medical School, were held in Portland, January 13. Leading state medical associations and scientific research associations participated in the ceremonies. The principal address was by Hon. A. L. Mills, President of the recent Health Exhibit. A bas-relief of Dr. K. A. J. Mackenzie will be placed in the main lobby. The construction of this building was due very largely to his constant efforts. An oil painting of Dr. S. E. Josephi, who preceded Dr. Mackenzie as Dean of the Medical School, was presented to the Board of Regents.

The Alumni Association of the University of Oregon Medical School held its annual meeting in Portland, Jan. 12-13. More than one hundred-fifty members were in attendance. Clinics were held in the hospitals of the city. The following officers were elected for the ensuing year: Pres., E. P. Steinmetz, Portland; First Vice-Pres., I. M. Lupton, Portland; Second Vice-Pres., J. L. Wooden, Clatskania; Third Vice Pres., V. R. Brook, Portland; Fourth Vice-Pres., T. Colberth, The Dalles; Sec'y., D. L. Palmer, Portland; Treas., Kitty P. Gray, Portland.

Jackson County Medical Society, which held its annual meeting in December, elected the following officers for the ensuing year: Pres., E. L. Woods, Ashland; Vice-Pres., F. G. Thayer, Medford; Sec'y.-Treas., W. W. P. Holt, Medford; Board of Censors, R. W. Stearns, Medford; E. B. Pickle, Medford; G. W. Gregg, Ashland; Delegate to State Medical Association, E. B. Pickle, Medford.

New Hospital Opened. Last month the Eugene Hospital moved into its new building which has just been completed at a cost of $100,000. It is a modern, up-to-date hospital building.

Returned from Russian Service. Dr. W. B. Nicholsen has returned from service with the American Relief Administration in Russia and will locate for practice somewhere on the Pacific coast. He says communism is dead in Russia and that in a few years the republic will be established. He reports many interesting observations of conditions in that country.

Elected to Advisory Committee. Dr. R. C. Coffey, of Portland, has been made a member of the Honorary Advisory Committee of the Louis Pasteur Centennial celebration in Philadelphia.

Commander of Post. Dr. Earl B. Stewart, of Roseberg, was last month installed as commander of Umpqua Post of the American Legion.

Elected Mayor. Dr. R. A. Joyce, of Philomath, has recently been elected mayor of the city. This is his second term in this office. He also serves as city halth officr.

President Board of Health. Dr. J. H. Rosenberg, of Prineville, has been elected president of the State Board of Health, of which he has been a member for two years.

Dr. I. B. Bartle, who formerly practiced at North Bend, has returned to that city for practice, after residing for several years in Nogales, Ariz.

Dr. R. W. Logan has located for practice at Seaside. He has recently practiced in La Grande and Umatilla.

Dr. V. L. Hamilton, of Coquille, has moved for practice to North Bend. His brother, Dr. C. W. Hamilton, who has practiced in Baker, will join him at North Bend.

Dr. Alex Reid has moved from Stanfield to Umatilla, where he has been appointed railway physician.

Dr. Malcolm Irvine, who has practiced in La Grande for the past year, has moved to Baker.

WASHINGTON

Spokane County Medical Society held its annual meeting, Jan. 11. The following officers were elected for the ensuing year: Pres., C. M. Doland; Vice-Pres., Chas. E. Butts; Sec'y., C. F. Eikenbary; Treas., G. T. Price; Board of Censors, Carl Wiseman.

Whatcom County Medical Society held its meeting last month at Bellingham, when the following officers were elected for the ensuing year: Pres., A. L. Greenwood, Bellingham; Sec'y., M. Mehlig, Bellingham; Treas., J. R. Morrison, Bellingham.

King County Medical Society held its annual meeting in Seattle, Jan. 8. The following officers were elected for the ensuing year: Pres., C. E. Hagyard; Vice-Pres., John Hunt; Sec'y.-Treas., R. F. Hain; Trustees, A. H. Peacock and F. A. Black, all of Seattle.

New Secretary for Health League. Mr. Robert O. Jones, of Boise, Ida., has been appointed Executive Secretary of the Public Health League of Washington. He has served two terms as Secretary of State in Idaho and was also in charge of the state licensure system. For four years he had the responsibility of enforcing medical practice acts and other such laws.

Superintendent of Hospital. Dr. W. H. Anderson, of Seattle, has been appointed superintendent of the County Hospital to succeed Dr. J. T. Mason, who has served in that capacity for four years.

New Hospital to be built. A new Providence Hospital is to built soon in Everett to cost $300,000. It will be situated at Pacific and Nassau Streets, a block East of the present hospital. It will be four stories in height and will contain one hundred and twenty-six beds.

Hospital Changes Hands. Centralia Hospital, built by Dr. L. A. Scace, recently deceased, has been purchased by Dr. Paul Sweet, of Seattle. It is one of the leading institutions of its kind in Southwest Washington and serves a large area of that part of the country.

Hospital to be Enlarged. Word has recently been received from the Bureau of Yards and Docks at Washington, D.C., that the Navy Yard Hospital at Bremerton is to be remodeled and enlarged at an expenditure of $150,000. The work is to be performed by the workmen in the yard and will take about six months for its completion.

Death of Well Known Nurse. Mrs. Etta B. Cummings died in Tacoma, Dec. 23. She graduated from Bellevue Hospital Training School for Nurses in the first class of that institution, in 1876, this being the first training school established for nurses in this country. She was the first graduate nurse in the U.S. to do private nursing outside of an institution. She has practiced nursing in Seattle and Tacoma for more than thirty-five years. She was prominent in graduate nursing organizations in this part of the country.

Appointed to Examining Board. Dr. P. W. Willis, of Seattle, has been appointed a member of the State Examining Board to succeed Dr. C. C. Tiffin.

President of Commercial Club. Dr. J. B. Bryne, of Seattle, was last month elected president of the Wallingford Commercial Club.

County Health Officer. Last month Dr. D. J. Cullen, of Puyallup, was appointed health officer for Pierce County in place of Dr. P. B. Swearingen, of Tacoma.

Commissioned in Reserve Corps. Dr. R. E. Elvins, of Spokane, has been commissioned as captain in the medical reserve corps.

Dr. S. J. Leonhardt, of Seattle, has recently been appointed surgeon on one of the U.S. coast patrol vessels. His headquarters will be at Juneau.

Dr. W. O. Bell, of Seattle, last month left for a year's study in Europe. He will pursue special studies in England, Austria and Italy.

Medical Wedding. Dr. Carroll Smith, of Spokane, was married Dec. 27 to Miss Lucile Barrett of that city.

IDAHO

Reappointed to Office. Dr. James R. Bean, of Wallace, was last month appointed county physician to succeed himself.

Dr. John F. Coonan, of Boise, was last month commissioned Captain of Cavalry, in the reserve corps.

Appointed County Physician. Dr. Thos. E. Mangum, of Caldwell, has been appointed county physician. He will designate five deputies to assist him in the county work.

Dr. F. L. Neeley, recently of Seattle, and formerly from Ontario, has located at Elk River for practice. He takes a position in a hospital recently held by Dr. Brunning.

County Physician. Dr. E. F. Guyion, of Montpelier, was last month appointed county physician by the board of commissioners. He has practiced at Bear Lake County for twenty-five years.

New County Physician. Dr. W. R. Hamilton, of Weiser, was appointed county physician last month. Dr. Schmidtz of Midvale will attend to the duties of the office in the Northwest section of the county.

Another County Physician. Dr. T. N. Braxton, of Boise, was last month appointed county physician by the Ada County Board of Commissioners.

Appointed on Competitive Bid. Dr. B. Chipman, of Grangeville, was last month appointed physician for Idaho county for the ensuing two years. His appointment was made by the county commissioners after consideration of competitive bids.

Dr. F. T. Harris, of Lewiston, was last month promoted to the rank of Lieut.-Col. of the Medical Reserve Corps.

OBITUARIES

Dr. Edward Mcguire, of Pullman, Wash., died Jan. 3, from cerebral hemorrhage. He was ill for several years. He was born in Baltimore, Md., in 1870. He came west with his parents in 1878, settling on a ranch near Colfax. He graduated from Kansas City Medical College in 1900. He returned to Pullman for practice retiring in 1911. He served two terms as mayor of the city and several terms as councilman and health officer.

Dr. W. P. Vanderpool, of Montesano, Wash., died Dec. 29, from cancer of the stomach, after a long period of illness. He was born in Ray County, Miss., in 1852. He graduated from St. Louis Medical College and practiced medicine in Missouri and Kansas for forty years. He lived in Montesano about a year and a half, where he conducted a pharmacy.

Dr. H. B. Haile, of Madras, Ore., died at his hospital, Dec. 16. He was sick but a few hours. He was born in New York City in 1879. At one time he practiced at Pomeroy, Wash., later at Grass Valley and Shaniko, Ore. He located at Madras in 1909. Soon after he purchased a building in that city and converted it into a hospital. He was a world war veteran, being first lieutenant in the medical corps. He was widely known and respected in central Oregon.

Dr. E. M. Johnson, of Portland, Ore., died Jan. 17, from cerebral hemorrhage. The attack came on him while he was performing a major operation at Emanuel Hospital. He was 55 years of age, born at Cambridge Springs, Pa. He graduated from Iowa State Medical College in 1897. He practiced in Iowa until 1915, coming from Aston to Portland in 1915.

Dr. C. V. Fisher, of Klamath Falls, Ore., died Jan. 19, at a Portland hospital as a result of cancer. He was 53 years of age. He graduated from Willamette University in 1897. After a year as interne at St. Vincent's Hospital, Portland, he settled at Dallas. Later he practiced at Roseburg. For a short time he practiced at Antioch, Calif., and located in Klamath Falls in 1906.

Dr. Frank W. Wood, of Portland, Ore., died Jan. 16, at the age of fifty years. He was born in Morristown, Ind., and practiced in Portland for sixteen years. He served as a member of the state examining board and was its secretary for five years.

DEPARTMENT OF HOSPITAL STANDARDIZATION

THE CENTRAL STANDARDIZATION COMMITTEE

A plan adopted by the Washington State Medical Association for uniform standardization of the various hospitals in the larger cities has proved of great value in coordinating the work in the different hospitals. Briefly, the plan is as follows.

Each hospital, thru its management, appoints an Executive Staff or Standardization Committee of from three to ten members. One member is chosen as chairman of the committee, another as secretary. It is the duty of this committee to organize the professional staff of that hospital along certain definite lines: (1) The selection of the staff. (2) Arrange for monthly clinical meetings. (3) Adoption of rules and regulations governing the staff and internes. (4) Arrange for the proper facilities for laboratories. (5) Review of case records of all deaths occurring in the hospital. (6) Recommend to the trustees of the hospital the names of those in the profession whom they consider qualified to practice medicine and surgery in that particular hospital.

The chairman and secretary of this committee from each hospital shall be members of the central standardization committee for the city. This committee shall meet once a month for the purpose of discussing such problems as are common to all hospitals. Among the various subjects which may come up for discussion are: (1) A standard technic for the preparation of the patient, the operating room, and the surgeons for a major and minor operation. (2) Listing the names of those members of the profession who attend the various clinical meetings held during the month. (3) Discussion of improvements in case records; discussion of improvements in operative and laboratory technic; discussion of rules governing internes; methods of training internes; coordination of courses for the training of internes and nurses; discussion of library facilities. (4) By united effort of all hospitals using hospital influence on undertakers for autopsies. (5) Use of the library for internes. (6) General discussion of rules and regulations governing the conduct of all physicians in the various hospitals, so that the rules in one hospital will be relatively the same in all hospitals. These and many other subjects come up for general discussion.

The central committee has no absolute authority. It is responsible to the county medical society, thru the Board of Trustees, and should make its annual report to the county society. It can make suggestions to each individual hospital staff but has no authority to order any of these suggestions to be carried out. A member of the Board of Trustees of the county society should always be present at the central standardization committee meetings.

This plan is now in effect in Seattle, Spokane and Tacoma. It would be a good thing to have it adopted in all cities having two or more hospitals.

THE OPERATING ROOM SLIP

The American College of Surgeons demands of all its members a complete record of all surgical procedures. The primary purpose of this record is for the benefit of the patient. The secondary benefit will be derived from its statistical value. It provides for (1) A preoperative diagnosis. (2) A postoperative diagnosis. (3) A record of the anesthesia. (4) A record of the operating team, the operator, assistants, surgical nurse, assistant nurse, and anesthetist. (5) The gross pathology. (6) What was done. (7) Condition during operation and at the end of the operation. (8) The surgeon's signature.

This form was not adopted because of the shape of the sheet or because of a desire to fill the page with needless material. Each of the subdivisions was adopted only after very careful consideration. From the standpoint of both the patient and statistics it is important to have both the preoperative and postoperative diagnosis, but neither is of any value unless the surgeon will put his preoperative diagnosis down and then a complete postoperative diagnosis. This is not always done, unfortunately. For instance, cancer of the uterus may be the preoperative diagnosis. This, of course, does not mean anything, but it is assumed that it is a malignant growth of some sort which is commonly called by laymen a cancer. If, however, after operation the record shows a fibroid of the uterus with its exact location, a chronic appendix, and possibly a cystic ovary, this becomes of value to the patient as well as for purposes of record.

This is only an illustration; the same applies in many other parts of the body. Surgeons should take more time to write careful reports, both before and after the operation. Oftentimes the standardization committee in reviewing the operative record would like more information regarding what was found and what was done than is recorded. For instance, it is sometimes important to know whether there are adhesions around a gall-bladder, when the record shows a stormy convalescence. If this is recorded on the operative sheet, it is much easier for the committee to understand the subsequent course in this particular instance. From the standpoint of statistics it is of great value to know as much as possible about the type of incision used in the operation, the character and number of sutures, any peculiarity in the anatomy, malformations, etc. From a statistical standpoint these are of value, even tho they sometimes mean nothing to the patient.

But this does not complete the operative record. The laboratory slip is a part of the record, altho detached therefrom. This slip should be the connecting link between the surgical department and the pathologic department of every hospital. On it a few of the cardinal symptoms and the indications for operation should be recorded. A statement as to where the tissue was obtained and the clinical diagnosis should be made. This little courtesy on the part of the surgeon will be greatly appreciated by the pathologist and soon a comradeship between the surgeon and pathologist will develop, due to their cooperation in case after case. This is what standardization really means. It is not the conforming to a certain set of rules, but the harmonious cooperation of one department with another.

Criticisms and suggestions on these various subjects are solicited for next month's issue. Address all communications to the Hospital Standardization Dept., Northwest Medicine, Seattle, Wash.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Syphilis. By Burton Peter Thom, M.D., Visiting Syphilologist to the Hospitals of Correction, New York City. 69 engravings. Cloth. 525 pp. $5.50. Lea & Febiger, Philadelphia and New York. 1922.

The present volume is not only of the greatest value in respect to its subject but the presentation is peculiarly happy in being wholly simple and practical, as well as authoritative. It is bromidic to say that to know syphilis and tuberculosis is to know medicine, and that they are equally important to every specialist and in every age and walk of life, but one can never safely forget them as possible underlying causes in every patient. In charity hospital practice one suspects syphilis in everyone, but among respectable and well-to-do patients the doctor is apt to ignore it. Even now what have been called parasyphilitic lesions, as aneurism or Charcot's joint, are often not appreciated as frankly syphilitic as chancre, in other words as straight treponema infections.

The chapters on hereditary syphilis and syphilis in the third generation are especially interesting and instructive. Diagnosis of congenital syphilis in the child is easy with snuffles, notched and screw driver-shaped upper two central incisors, scars or keratitis deafness, etc. But delayed hereditary syphilis till as late as thirtieth years with disappearance of Wassermann reaction, and the cases of hereditary syphilis that never appear until adult, and often late adult life, are not only frequent and of great importance but receive careful and extensive consideration by the author. The occurrence of syphilis in the third generation is a fact but rare.

The writer prefers neoarsphenamine because of its less toxic nature in not having a hemolytic action. While less potent than the older preparation one has merely to give a larger dose. Mercury, Thom believes, still is essential in removing the products of lues in the tissues, as also iodides, altho neither are destructive to the treponema. The book can be highly commended to every member of the profession because of its practicality, common sense and utility to all—general practitioners and specialists alike. While lues occurs even unto the third generation we find no reference to "bovine syphilis," or the genesis of all diseases in syphilis, as now trumpeted abroad by Abrams, the author of that work formerly styled spondulix therapy by the reviewer. If Abrams would first demonstrate syphilis in the bovine its transmission to man in bovine vaccination would be more convincing. The reviewer is more than ever satisfied of his original estimate of spondylotherapy of Abrams.

WINSLOW.

Bronchoscopy and Esophagoscopy. By Chevalier Jackson, M.D., Professor of Laryngology, Jefferson Medical College, etc. Octavo of 346 pp. with 114 illustrations and four color plates. Philadelphia and London, W. B. Saunders Company. 1922.

This book is based on an abstract of the author's larger work "Peroral Endoscopy and Laryngeal Surgery" which was published in 1914. It is about one-fourth the size of the original volume and is intended for a working manual, whereas the former volume is in text-book style. A large number of corrections, revisions and additions have brought the subject up-to-date. This volume contains one new chapter on "Acute Stenosis of the Larynx." As in all his publications, the author attempts to give by photographs, drawings, and word-pictures a clear conception of difficult mechanical problems. As is well known, most of Dr. Jackson's actual working procedures are original and therefore the subject matter of his publications is to be found nowhere else in the literature. Needless to say this volume will be studied by all those interested in this special field.

HARTER

The Place of Version in Obstetrics. By Irving W. Potter, M.D., F.A.C.S., Buffalo, N.Y. Obstetrician-in-Chief Deaconess Hospital and St. Mary's Maternity Hospital, etc. 138 pp. With 42 illustrations. $5.00. C. V. Mosby Company, St. Louis. 1922.

The author states that from his experiences, extending over many years of practice, including thousands of cases of labor, he believes version is justifiable for eliminating the second stage of labor. Ninety per cent of his cases are delivered in this manner and with nearly a thousand cases he has had no maternal mortality and a fetal mortality of only 2.3 per cent. The pains of the second stage of labor have been eliminated. The vagina and perineum have been saved hours of stretching, so that relaxed outlets, with falling bladders and rectoceles have been avoided. He completes the delivery within an hour. All details of the procedure are given in the text with abundant illustrations which detail the succeeding steps of delivery. This is an instructive book if one desires information on this technic.

SMITH.

Physical Diagnosis. By W. D. Rose, M.D., Lecturer on Physical Diagnosis and Associate Professor of Medicine, University of Arkanas. Third Edition. 319 Illustrations. 755 pp. $8.50. C. V. Mosby Co., St. Louis. 1922.

While the present edition is an improvement on that of 1921, yet it seems to the reviewer to fall short of what a book on physical diagnosis should be in order to equal or surpass the classical works at our command. The author states that the matter on the circulatory system has been entirely rewritten. In our review of the former edition we particularly criticized this section which is now much improved but still far from perfect. Concerning mitral systolic murmurs it is said that functional may be distinguished from organic by "inherent characteristics," such as transmission into axilla, etc. This is not true and there is no certain means of discriminating between functional and organic systolic murmurs except by absence of etiologic history and hypertrophy, and the presence of normal function, in murmurs of accidental origin.

Then, in regard to aortic systolic murmurs the author gives the impression that most of them are due to actual aortic lesions, whereas they are most common as purely accidental murmurs, indicating no cardiac disease whatever. Anyone doing cardiovascular work in the late war can verify this statement. Pure aortic stenosis is shown by the presence of an aortic murmur but this is extremely rare and was never seen in the examination of thousands of soldiers, while accidental aortic systolic murmurs are hourly occurrences. Again, Rose states on page 388 that the Flint murmur is not accompanied by a thrill, while on page 344 he says a thrill does accompany a Flint murmur. Both statements cannot be right. The author also is wrong in saying that an aortic diastolic murmur is most audible as a rule at the aortic area. It is heard in most intensity at the fourth left costal cartilage in four-fifths of cases. He omits speaking of paroxysmal auricular fibrillation.

But it is not only in regard to the heart that the writer is inaccurate and incomplete. In speaking of tenderness in the appendix region he notes only a few of the possibilities in diagnosis and omits perhaps the most common in not noting colitis and ureteritis. In describing palpation of the appendix he indulges in romance, long since discredited. About a quarter of a century ago Maurice Richardson, the leading surgeon of New England, demonstrated the appendix by palpation to the reviewer, but celiotomy also demonstrated it more convincingly in a wholly different situation. There are standard works on physical diagnosis of half the cost and twice the value of Rose's work, in the reviewer's opinion.

WINSLOW.

Opiate Addiction. Its Handling and Treatment. By Edward Huntington Williams, M.D. Formerly Assistant Prof. of Pathology, State University of Iowa, etc. 194 pp. $1.75. The Macmillan Company, New York.

The increasing prevalence of narcotic addiction makes a book of this character especially welcome to the medical profession. The handling of this condition has been so chaotic in the past and subject to such varied influences that an authoritative publication is welcome. The author describes the different methods of treating addiction. A long chapter is devoted to the gradual withdrawal method of treatment. This treatment applied to ambulatory cases is a compromise. The proper place for the treatment of opium addicts is a hospital or some similar institution. In general terms the gradual reduction treatment is based on substitution of drugs with the use of some other substance to replace the effect of the narcotic. While there is no royal road to recovery from this condition, one of the rapid withdrawal methods in the hands of a skillful physician has often restored the victims to health quickly with a minimum of discomfort. The details of various methods are here presented.

SMITH

Animal Parasites and Human Disease. B. Asa C. Chandler, M.S., Ph.D., Instructor in Biology, Rice Institute, Houston, Texas. Cloth. 571 pp. $4.50. John Wiley & Sons, New York. 1922.

It is surprising the amount of information, valuable to physicians, that can be incorporated in a book written by a layman for the perusal of laymen. The work of Mr. Chandler is an example in point. It covers the field of animal parasites in an exceptionally thoro manner and so entertainingly that the reader hardly realizes the amount of valuable knowledge imbibed. The introduction alone is of the greatest value to the public, because of sanitary facts, illustrated with historical data.

The contents consists of introduction, parasites in general, introduction to protozoa, spirochaetes, Leishman bodies and Leishmaniasis, trypanosomes and sleeping sickness, intestinal flagellates and ciliates, amebae, malaria, other sporozoa, and obscure or invisible parasites, introduction to the "worms," the flukes, the tapeworms, hookworms, other intestinal roundworms, trichina worms, filariae and their allies, leeches, introduction to arthropods, the mites, ticks, bedbugs and their aliles, lice, fleas, mosquitoes, other bloodsucking flies, fly maggots and myiasis, sources of information. The author's choice of words and presentation of the subject matter are exceptionally good. The illustrations, with some few exceptions, are excellent and the entire work is a valuable addition to any medical library.

WEST.

Submucous Resection of the Nasal Septum. By William Meddaugh Dunning, M.D., Consulting Otologist, Manhattan State Hospital, N.Y., etc., 100 pp. 25 Custs and Illustrations. $1 50. Surgical Publishing Company, New York. 1922.

This is a well written book, devoted to the finer technic of the submucous resection of the septum nasi. It is terse, amply illustrated and is worthy the serious attention and consideration of all conscientious rhinologists, as its contents thoroly cover the nose, breathing and smelling, common septal deviations, as well as the uncommon deformities. The usual surgical procedure for the common deviations is taken up in detail and is followed by description of special procedures in the submucous resection of the nasal septum, as indicated in unusual and special deformities.

CHASE.

Diseases of the Ear, Nose and Throat. By Wendell C. Phillips, M.D., Professor of Otology, New York Post Graduate Medical School and Hospital, etc. Sixth revised edition. 578 illustrations with 37 full page plates. 881 pp. F. A. Davis Company, Philadelphia. $8.00. 1922.

This volume covers the diseases of the ear, nose and throat in a logical and orderly manner, the book being divided into three parts with subsections. Part I., consisting of 28 chapters, covers the ear most thoroly, while Part II, consisting of four chapters, is devoted to the influence of general diseases upon the ear, nose and throat. Part III is divided into three subsections of 22 chapters, covering the nose, the nasal accessory sinuses and the larynx. Both the author and publisher are to be complimented upon this excellent work.

CHASE.

Psychoanalysis: Its Theories and Practical Application. By A. A. Brill, Ph.B., M.D., Lecturer on Psychoanalysis and Abnormal Psychology, New York University. Third edition, thoroughly revised. Octavo of 468 pages. Philadelphia and London: W. B. Saunders Company. 1922. Cloth. $5.00 net.

The subject of psychoanalysis is one very much before the public and medical profession of these days. Its practice seems to have been popularized by experiences from the world war. The writer bases his views and practice on those originally propounded by Freud, but these have been modi-

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fied and adapted to his own views, which in some respects differ materially from those of Freud. Several chapters are of special interest to the general practitioner, dealing with matters which come under his immediate observation, such as the subjects of masturbation and homosexuality. These and other topics are considered in a common sense fashion which is not the case of their treatment by a large proportion of the medical profession. The volume contains a great deal of useful information, making it worth while reading by any physician. SMITH.

Generalized Pain. By Prof. Dr. Norbert Ortner, Vienna. Only authorized translation into the English language of the Second German Edition. By Francis J. Rebman. With illustrations by Thomas W. Edgar, M.D., New York. 596 pp. Medical Art Agency. New York. 1922.

This volume is Part II of Clinical Symptomology of Internal Diseases. Part I was on the subject of abdominal pain. This deals with pain felt by the patient in those parts of the anatomy not included in the first volume. It is written in simple and attractive language. The vast majority of patients consulting a physician do so because of pain. Its cause is often one of the most baffling experiences of the physician. The chapters of this book deal each with pain in a different organ, thus covering most of the regions of the body. Many suggestions are enumerated as to origin of pain which might readily escape the attention of the average observer. This is not a volume on treatment, but is valuable in the realm of diagnosis.

Clinical Electrocardiography. By Frederick A. Willius, M.D., Section on Clinical Electrocardiography, The Mayo Clinic, Rochester, Minnesota and The Mayo Foundation, University of Minneosta. Octavo of 168 pp. with 185 illustrations. Philadelphia and London. W. B. Saunders Company, 1922. Cloth. $5.00 net.

The author opens his book with a brief summary of the physiology of the heart and its bearing on the interpretation of the electrocardiograph. Then he gives a very concise review of the known facts on the interpretation of electrocardiographic curves, as elucidated by Lewis, Cohn, Eysten and numerous other observers. Nothing original is offered regarding the cardiac mechanism, but the review of the authorities is concise and accurate. The unusual feature of the book is the author's statistics on the prognostic significance of the arrhythmias and abnormal cardiographic complexes. His basis for deductions is more than 7000 patients electrocardiographically examined and classified clinically. He analyzes results over years as shown by mortality rate attending the various cardiac disorders discovered electrocardiographically, and, therefore, makes a distinct contribution to the literature. The book contains 138 cardiographic tracings, and excellently sets forth the present status of electrocardiography. J. M. BLACKFORD

Nerve Exhaustion. By Maurice Craig, C.B.E., M.D., (Contab.) F.R.C.P. (London), Physician for and Lecturer in Psychological Medicine, Guy's Hospital, etc. 148 pp. $2.25. Lea & Febiger, Philadelphia. 1922.

Nerve exhaustion is defined as a state in which there is undue physical and mental fatigue. It may occur in any period of life and is largely dependent upon the severity of the determining stress as applied to a given individual. The given causes range from inheritance to disturbances of emotions affected by work, worry, infections and abnormalities of the endocrine glands. Sleeplessness in this condition is so important that a chapter is devoted to it. Treatment covers nearly everything in the field of medicine, including psychotherapeutics and psychoanalysis. Details of treatment are too many to consider at this time. The book is an instructive one for the treatment of this condition.

Physical Exercies for Invalids and Convalescents. By Edward H. Ochsner, B.S., M.D., F.A.C.S. Attending Surgeon Agustana Hospital, Chicago. Second edition. 56 pp. 75c. C. V. Mosby Co., St. Louis. 1922.

This little volume is intended as a manual of physical exercises for patients convalescing from surgical operations and severe illness and for those engaged in sedentary work who lack proper physical exercise. It contains forty-two exercises, each one illustrated with descriptions beneath for the performance of each.

The Medical Clinics of North America. (Issued Serially, one number every other month). Vol. VI., Number III., November, 1922. By New York Internists. Octavo of 365 pages and 21 illustrations. Per clinic year (July 1922 to May 1923). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

This number is replete with valuable clinical descriptions of cases by leading New York physicians. The subjects include papers on diabetes, pernicious anemia, congenital pyloric stenosis, diseases of the aorta and aortic valves and other subjects of equal importance. The latest information on many medical conditions of great value to the practitioner are described in this volume.

The Surgical Clinics of North America. (Issued serially, one number every other month). Vol. II., Number VI. (St. Louis Number December 1922). 248 pages with 105 illustrations and complete Index to Volume II. Per clinic year (February 1922 to December 1922). Paper $12.00 net. Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

This volume contains clinical descriptions by prominent St. Louis surgeons. Dr. Bartlett describes goiter operations; Dr. Sachs deals with fractures of the skull; Dr. Brooks has two cases of aneurism; Dr. Hill has a description of congenital pyloric stenosis. These are a few of the contributions to important surgical conditions herein described.

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ORIGINAL CONTRIBUTIONS

THE TREATMENT OF CARCINOMA OF THE UTERUS. WITH SPECIAL REFERENCE TO SURGERY, X-RAYS AND RADIUM*

HENRY SCHMITZ, M.D., F.A.C.S.
CHICAGO, ILL.

The tratment of uterine carcinomata to be curative implies the total removal of all, absolutely all, neoplastic tissue from the patient. The methods chiefly employed are surgical and radiologic. The success of either method depends on a correct diagnosis which must include not only the clinical and histologic diagnosis, but also the determination of the extent of the neoplasm within the body. The latter may best be elicited by considering the following questions:

1. Is the carcinoma clearly confined to the uterus?

2. Has it invaded the contiguous tissues and organs as the parametria, the broad ligaments, the sacrouterine legaments, the vagina, the bladder or the rectum?

3. Has it invaded the regional lymphnodes, as the hypogastric, the external iliac, the sacral, the inferior and the superior lymphglands?

4. Do distant metastases exist, for instance in the liver or the osseous system?

5. Do other grave constitutional diseases coexist with the uterine carcinoma, as tuberculosis, diabetes mellitus, decompensated heart disease, Bright's disease, and so forth?

The answers to these questions must be based on a careful general and special regional examination with a corroboration by special laboratory methods wherever indicated. The regional examination should comprise a bimanual abdominovaginal, and a bimanual rectoabdominal palpation and an inspection of the cervix, vagina, bladder and rectum by specula and endoscopic instruments. Such a careful procedure will enable us to answer the five questions and group the carcinomata as follows:

Group 1. The *localized* carcinoma. The neoplasm is clearly confined to the uterus after a physical examination.

Group 2. The *borderline* carcinoma. It is doubtful after a physical examination whether the neoplasm is still confined to the uterus or has begun to invade the neighboring tissues, organs or regional lymphnodes.

Group 3. The clearly *inoperable* carcinoma, in which an invasion of the neighboring tissues and organs or the regional lymphnodes can be demonstrated.

Group 4. The *advanced* carcinoma. It is characterized by a "frozen pelvis", a marked cachexia or distant metastases.

Group 5. The *complicated* carcinoma. The cancer may be limited to the uterus but grave constitutional diseases coexist.

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* Read before the Twenty-Eighth Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Aug. 31-Sept. 2, 1922.

The indications for treatment must be based solely on such a grouping. A localized cervical carcinoma can be safely eradicated by an abdominal or vaginal panhysterectomy. The abdominal operation is preferable and should be the operation of choice. After opening of the abdominal cavity we must immediately proceed to palpate the adnexa and regional lymphnodes. If they are found to be infiltrated, it is useless to proceed with the panhysterectomy. The operation was simply exploratory. If an abdominal operation is difficult of execution on account of extreme obesity or mild forms of heart and kidney diseases, or rather complicating diseases, then the vaginal procedure must be chosen, altho it is not possible to explore the pelvic organs as satisfactorily as thru an adbominal incision.

The Wertheim extended radical abdominal panhysterectomy has a high primary operative mortality, varying from 15 to 25 per cent in the hands of different surgeons. It is difficult of execution, accidents are frequent such as vesical fistulae, injuries to the ureters and rectum. The advantages claimed for it as to permanent cures are lost by the high primary mortality. Therefore, it can never find a place in our clinics.

The accidents during the operation, the primary mortality, the percentage of recurrences increase rapidly, if we subject borderline cases to surgical eradication. The possibilities of totally eradicating all carcinoma elements are improbable and infinitesimal. Operative procedures applied to such cancers have tended to discredit surgery. Consequently the general practitioner and the laity have realized this state of affairs and hesitate to recommend or to resort to surgical treatment, even if the disease could be successfully eradicated thereby. Confidence of the medical profession and the laity in the surgical treatment can only be reestablished by an honest adherence to the one indication for surgical treatment of cancer of the cervix: It must be clearly localized within the uterus.

Carcinomata of groups 2 to 5, therefore, contraindicate surgical removal. Unfortunately the number of malignant neoplasms of these groups form the larger percentage of cancers entering our clinics. We may state that the percentage is as high as 80 to 90. This state of affairs is appalling. At the same time it indicates the importance of an early and correct diagnosis; it compels the education of the laity to seek medical aid early. Every case of uterine hemorrhage and discharge should never be treated without a thoro examination and expert diagnosis.

Various methods have been advocated for the treatment of borderline and inoperable cervical carcinomata, as cauterization by heat, chemicals and surgical fulguration, the autogenous tumor extracts, intravenous injections of solutions of colloidal metals, as selenium, copper, gold and arsenic and the application of radium and x-rays.

Radium and x-rays have received more attention on the part of the medical profession and the public alike than any other form of treatment advised for inoperable carcinomata. We are still debating the question whether the rays relieve the symptoms or cure the disease. However, radiation treatment of carcinomata has been carried out for a sufficient number of years in some of our larger clinics that it is timely to publish the statistics of the results obtained and thereby demonstrate the efficacy of radiation therapy in cervical carcinoma. At the last annual meeting of the American Radium Society Burnam, of Balitmore, presented the technic of the treatment with radium emanation and the results observed. John G. Clark and Floyd Keene, of Philadelphia, described their technic with radium capsules of a content of 100 mg. el. and discussed the statistics obtained. The essayist demonstrated the technic of the combined use of radium and x-rays and gave the statistics of all the five year cases. The latter will be found in the closing paragraphs of this paper.

The success of radiation therapy depends on the solution of the problem that a dose of rays must be applied to the deeply seated cervical cancer which will kill it without permanently traumatizing the neighboring healthy tissues and organs, as the bladder, the rectum and the bowels. This can be accomplished by the newer technic of radiation therapy for deeply seated malignancies. The technic comprises the determination of (1) the intensities of x-rays and gamma rays for variable distances by physical methods; (2) a unit of dose, so we may possess a biologic standard for comparison. This is known as the erythema skin dose; (3) a lethal carcinoma dose, and (4) a technic based on the intensity, the erythema skin dose and the lethal carcinoma dose.

The description of the details of this work would necessitate a highly technical discussion.

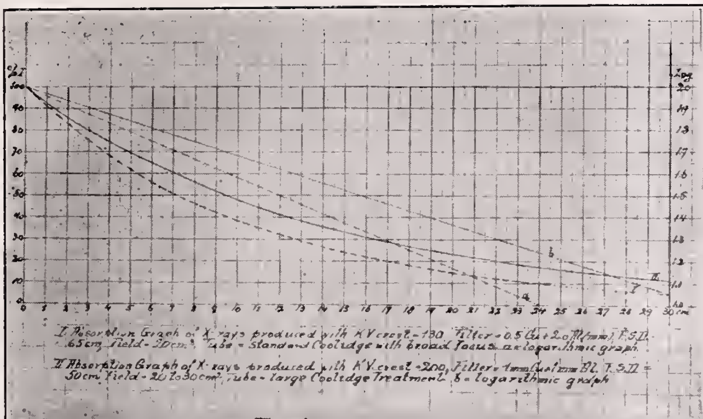

Fig. 1

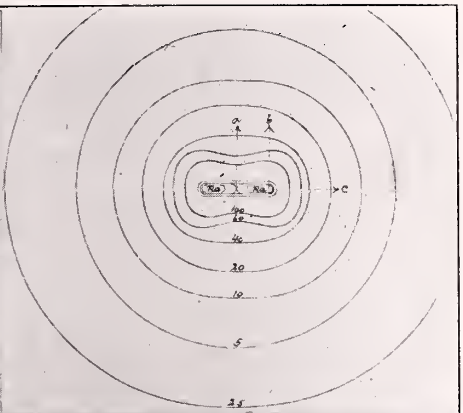

Fig. 2

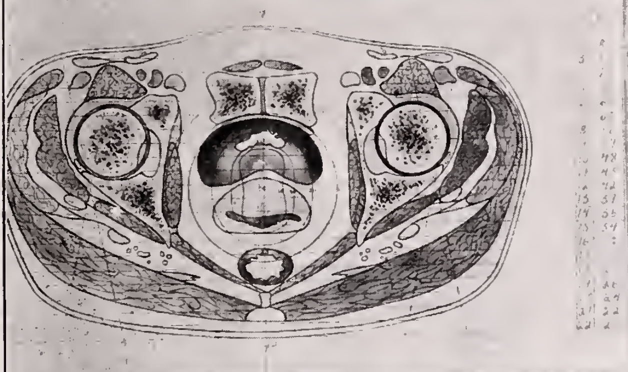

Fig. 3

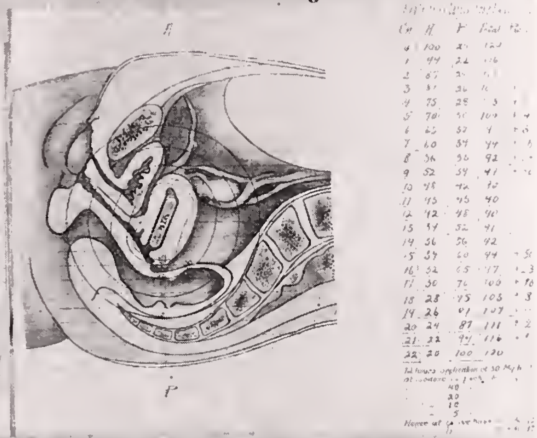

Fig. 4

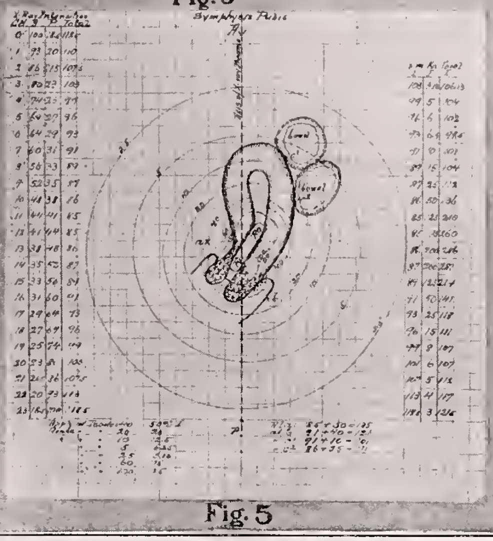

Fig. 5

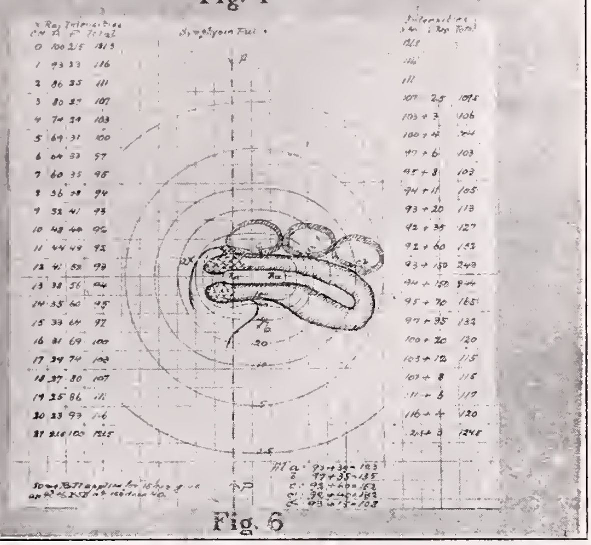

Fig. 6

Fig. 1. By means of these graphs the per cent of values of x-ray intensities may be read off for each centimeter. Fig. 2. Equal intensity curves of 50 mg. radium element in water. Patterns made of these equal intensity curves may be drawn in transverse or longitudinal sections of the pelvic organs. Thus we know the correct intensities of the gamma rays thruout the pelvis. Fig. 3. The x-ray intensities and the equal intensity curves of radium entered on a transverse section. Fig. 4. The summation of the combined x-ray and radium entered on a median longitudinal section. Fig. 5. The application of the problem in actual practice. The uterus is in anteversion. Fig. 6. Another example. However, the uterus is in retroversion.

This would be interesting to the radiologist but would tax the patience of the general practitioner. Therefore, I have inserted the illustrations of these methods in figs 1 to 6. The legends explain them. I may be permitted to state that it is well possible with these newer methods to destroy deeply seated malignancies without permanent injury to the neighboring organs.

The efficacy of any treatment of carcinoma can be proven only by a careful follow-up system and statistics. The follow-up system should determine whether the patient was relieved from the symptoms for which she consulted the physician and for how long a time; *the subjective relief,* or whether the patient has lost all signs of the disease; *the anatomic relief or local healing;* and finally whether the patient has survived a five-year period free of all symptoms and signs; *the absolute cure.* Our statistics have been compiled from the latter standpoint. They present two facts; the number of cured patients in one column and the number of those absconded, unimproved or dead in the other column.

From 1914 to the end of 1921 four hundred twenty-three (423) cases of cancer of the female genitourinary tract came to our clinic for treatment. They were tabulated according to location and year as follows:

Region	1914	1915	1916	1917	1918	1919	1920	1921		%
Vulva ...	..	..	2	..	..	4	2	2	10	2.3
Urethra .	..	..	4	2	1	..	1	..	8	1.9
Bladder	3	4	..	4	6	9	5	6	37	8.6
Vagina	..	1	..	1	1	1	..	6	10	2.3
Cervix	12	31	42	24	38	45	60	51	303	72.0
Corpus	2	1	..	2	5	5	3	7	25	5.9
Ovaries	1	2	3	2	3	6	3	10	30	7.0
Total for each year	18	39	51	36	54	70	74	82	423	

According to years and groups the cervical carcinomata were distributed as follows: The number in parenthesis indicates the number of patients alive and well to date:

	1914	1915	1016	1017	1918	1919	1920	1921	Total for each group
Localized	..	1	1	..	1	2	4	4	13
		(1)	(1)			(2)	(3)	(4)	(11)
Borderline	1	4	5	2	4	2	4	4	26
		(1)	(3)		(2)	(1)	(3)	(4)	(14)
Inoperable	7	15	10	13	14	18	20	17	114
			(1)	(4)	(2)	(5)	(7)	(12)	(31)
Advanced	..	4	9	6	8	10	21	17	75
						(1)	(2)	(7)	(10)
Recurrent	4	7	17	3	11	13	11	9	75
			(1)		(1)	(1)	(3)	(5)	(11)
Total for each year	12	31	42	24	38	45	60	51	303
		(2)	(6)	(4)	(5)	(10)	(18)	(32)	(77)

The localized cervical carcinomata complicated by constitutional diseases and therefore contraindicating operation are added to the localized groups.

Of 109 cervical carcinomata treated between 1914 and 1917 twelve are alive and well today. If we subtract from these figures the recurrent cases that were operated upon and later on came for treatment for recurrences, namely 31, and the advanced cases, numbering 19, which are treated only paliatively, as they cannot be cured by any known methods of treatment, then we have 59 cases of cervical carcinomata of groups 1, 2 and 3 with eleven cures, that is, 18.75 per cent.

However, if we consider only those cases that possibly would come under the category of surgical statistics, i.e., groups 1 and 2, we have 14 cases with 6 five-year cures, i.e., 42.85 per cent.

Subjecting the statistical results to a minute study we are at once surprised about the poor results obtained in the last two groups, namely, the advanced and the recurrent cases. Indeed it is a fact that radiations will cause only a temporary alleviation of the symptoms in the cases of these groups. At times we may observe a case that apparently appears to be subjectively and anatomically relieved. This relief, however, lasts only for a short while. We also must be careful in the application of the rays in the cases belonging to this group, as otherwise the toxemia caused by the rays may be so severe as to kill the patient. The natural power of resistance to the toxemia is so weakened that the patient can no longer activate sufficient defensive force to tide her safely over the period of reaction. Hence in this class of cases we attempt to relieve the symptoms by a small dose of radium of about 600 to 1000 mg. el. hrs. Should the regional lymphnodes be involved, and the vaginal fornices and surrounding tissues be free of any recurrence, then the application of a full dose of x-rays is indicated. We can enhance the deep intensity at the lateral bony pelvis by the application of a lateral field. This may be done by placing the patient in the lateral Sim's position. The axis of the x-ray beam is determined by locating the vaginal fornix or the cervix and projecting this point vertically onto the lateral field. (See fig. 7.)

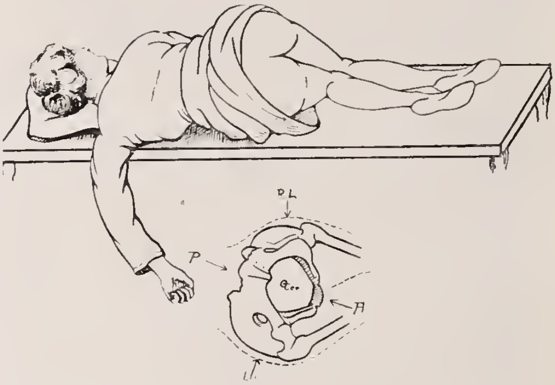

Fig. 7. The position of the patient if a lateral field must be given.

We often read the statement in medical literature that whenever possible radiation treatment should be combined with surgical procedures, instituted either preceding or following the application of the rays. Thus it has been advised to remove the cancer masses with excochleation, cauterization with heat by means of soldering irons, the J. F. Percy cautery or surgical fulguration before applying the rays; also to subject the patient to a panhysterectomy, if an anatomic relief is seen following the radiation.

We are of the opinion that such procedures do not benefit the patient. On the contrary, she invariably becomes refractory to the rays or has an early recurrence. We also must warn against a repetition of the radiation treatment. If the latter has been correctly applied as regards dose and technic, a second application cannot improve the results of the first treatment. The effects of the radiation on the tissues wear off very slowly, so that from 9 to 18 months pass by before the normal and diseased tissues have completely recovered from the injuries of the first radiation. Microscopic examinations of radiated tissues show that the cells return to a normal state within 2 to 3 months. However, the influence of the rays on the cells continues for a much longer period, usually from 9 to 18 months. If a second intensive and full treatment is given before the lapse of this time, the tissues and organs exposed to a second full radiation dose will be permanently injured. Such injury manifests itself in a radiation ulcer or necrosis which is often permanent. Even if we should succeed in healing the skin defect by actinic rays or excision and subsequent skin grafting, the contraction of the internal organs, as the bladder and rectum, will lead to chronic invalidism.

Should surgical treatment of a localized cervical carcinoma be preceded or succeeded by radiation therapy? Obviously if the indications for treatment have been carefully kept, pre- or postoperative radiations are unnecessary. Should the surgeon be in doubt as to the total eradication of the cancer cell elements, then a course of ray treatments should follow. It must be as intense as if the operation had not been performed. The uterine body is replaced by a phantom uterus made of bakelit or balsam wood. The latter is inserted between the folds of the broad ligament by removing the row of sutures closing the vaginal roof. Without the use of the phantoms we cannot apply a dose of gamma rays which would suffice to enhance the action of the x-rays.

SUMMARY

1. Cervical carcinomata must be grouped for purposes of prognosis and treatment.

2. Careful statistics must be kept to establish the efficacy of the treatment.

3. Studying the grouping and statistics we may establish the following rules for treatment:
   - (a) Localized carcinomata, associated with grave constitutional desires, should be treated by an abdominal panhysterectomy.
   - (b) Borderline and clearly inoperable and operable but complicated cases should be treated by a combined full dose of gamma and x-rays.
   - (c) Advanced and recurrent cases should be treated palliatively by x-rays or radium.

4. Radiation therapy should not be preceded or succeeded by surgical therapy. The latter is not only unnecessary but decidedly diminishes the good results observed after radiation therapy.

5. Repetition of a course of radiation treatment is not advisable. It will not improve the results of the first treatment and almost invariably will be followed by severe and permanent tissue injuries.

DEEP ROENTGEN THERAPY*

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SPOKANE, WASH.

There are two primary requirements in the dosage of deep seated malignant lesions. First, the entire area must be treated with the maximum homogeneous radiation which the normal tissues will stand; second, in some cases, where masses of malignancy are accessible, radium should be used to give a considerable amount of additional radiation over a limited area. Deep-seated nonmalignant lesions ought to receive homogeneous radiation, but the amount given should be considerably less than the normal tissues will tolerate.

We have had recently a change in our treatment technic. With the old machines, using the universal Coolige tube, 9-inch spark gap, 4 mm. aluminum filter, 8-inch distance and 3-inch port of entry, we obtained a depth dose of 9½ per cent. By depth dose we mean the percentage of the surface dose which reaches a point 10 cm. below the surface. We now use 217,000 volts with a filter of 1 mm. of copper and 1 mm. of aluminum

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* Read before Thirty-Third Annual Meeting of Washington State Medical Association, Tacoma, Wash., Sept. -7, 1922.

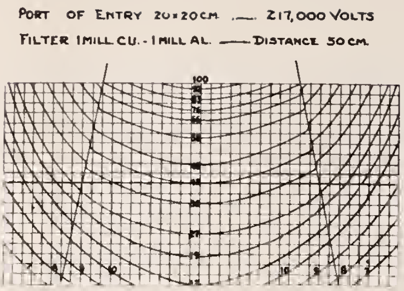
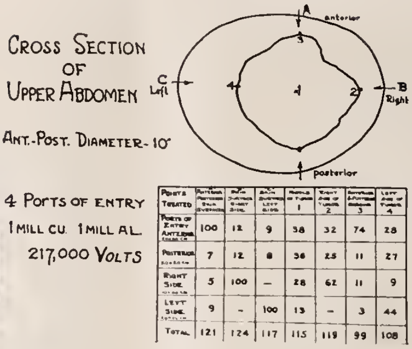


Fig. 1



Points Treated	[illegible]	[illegible]	[illegible]	[illegible] 1	[illegible] 2	[illegible] 3	[illegible] 4
Ports of Entry Anterior	100	12	9	38	32	74	28
Posterior	7	12	8	36	25	11	27
Right Side	5	100	—	28	62	11	9
Left Side	9	-	100	13	—	3	44
Total	121	124	117	115	119	99	108

Fig 2

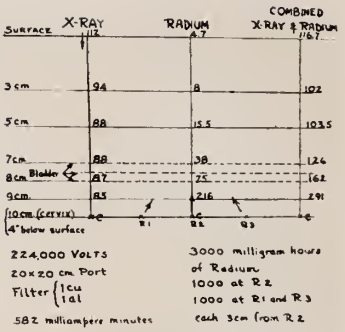


Fig. 3

Fig. 1. Percentage of skin dose at different depths. Fig. 2. Fairly uniform dosage with four ports of entry. Fig. 3. Combined x-ray and radium dosage.

20x20 cm. port of entry, 20 inch distance and get a 43 per cent depth dose. To put this in another way, where formerly 1|11 of the surface dose reached the interior thru one port of entry, we now have a little less than ½ of the surface dose reaching the middle of an 8 inch body. The greater the penetration the less number of ports of entry required. The old technic required many ports of entry and it was impossible to secure homogeneous radiation. Our present technic requires four ports of entry, when no radium is used. When we use a building up dose of radium, we require two ports of entry. If eventually we get tubes which will produce a depth dosage of 60 per cent, we will require only two ports of entry for the ordinary patient.

When we use the copper filter and the high voltage current, the skin stands about double the dosage as compared with the filter of 4 mm. of aluminum. This means a corresponding increase in the depth dose.

In the treatment of malignant lesions we have a few important general rules to follow.

1. The general condition of the patient should be investigated and the diagnosis should be as accurate as possible. In connection with this I should like to emphasize accurate and complete histories, microscopic section wherever possible, blood examination before and after treatment, and x-ray examination of the chest, as a routine measure. We often find metastasis in the chest without chest symptoms.

2. Lesions which produce metastasis should not be given local treatment only. For instance, in treating carcinoma of the lip, the local lesion and the entire neck and upper part of the thorax should be treated.

3. No malignancy or lymphatics adjacent to it should be given a small stimulating dose. For example, we should not treat malignancy of the cervix with radium alone and give small, stimulating doses to the lymphatics in the parametrium.

4. The dosage of x-ray given to the entire area involved should be the greatest possible dose that the normal tissues will stand without permanent injury. The so-called 100 per cent or epilation dose cannot be greatly exceeded, when treating the abdomen, but I have given double that amount to lesions in the neck and I believe we can give a 200 per cent dose in lesions of the extremities, such as sarcoma of the soft tissue of the thigh.

5. In addition to the general uniform radiation with the x-ray, we should wherever possible give a knock-out dose with radium. This is particularly necessary in carcinoma of the cervix.

From a treatment standpoint nonmalignant lesions are in a separate class. We are not justified in giving doses which will be followed by any considerable amount of irritation, radiation sickness, or unpleasant sequelae, such as telangiectasis. For example, we should not produce telangiectasis in the treatment of a nonmalignant goiter. Fortunately, the nonmalignant lesions do not require extremely heavy dosage. We should use the high tension current for any lesion below the surface, but with fibroids, hypertrophied prostates, goiters, and the various gland enlargements, we stop considerably short of the carcinoma dose. The dosage may be divided and given at different times, thus avoiding undue radiation sickness. The treatment of uterine fibroids has been extremely satisfactory. The tumors disappear except in a very few instances, and the symptoms are almost invarably relieved.

Fig. 1. Shows the percentage of dosage at different depths. The full 100 per cent of the filtered rays strike the surface, 43 per cent reaches

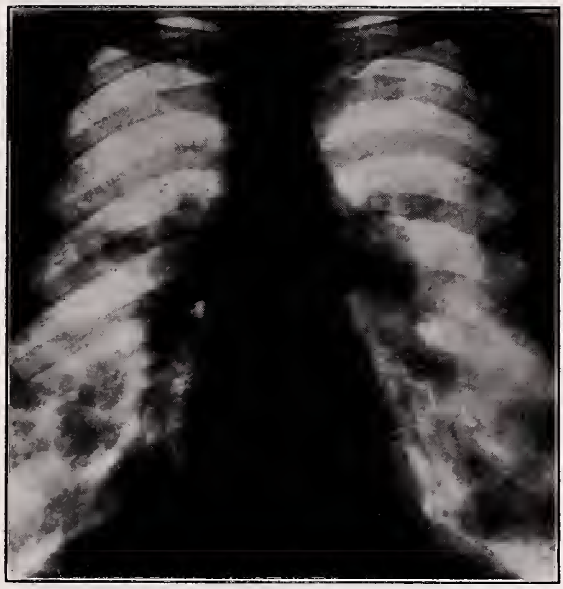


Fig. 4. Carcinoma of lung before treatment.

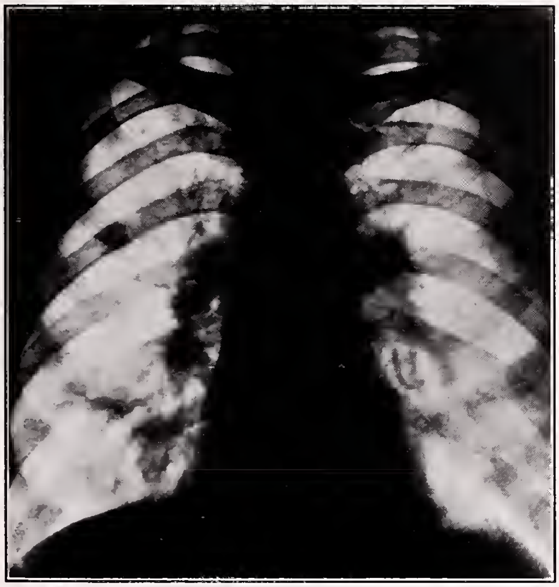


Fig. 5. Same case as Fig. 4, five weeks after treatment.

the middle of the body 10 cm. below the surface. This is known as the depth dose, 12 per cent coming out on the opposite side. If the patient were then turned over, we could give another 100 per cent to the skin on the posterior surface of the body, and another 43 per cent depth dose. This would make a total depth dose of 86 per cent, and a total skin dose of 112 per cent. This dosage is not sufficiently uniform.

The second and third figures show methods of correcting this insufficient depth dosage.

Fig. 2. Here we have represented a cross section of an abdomen, 2 cm. thicker than the average. The anteroposterior diameter is 10 in. A large lesion is to be treated and we estimate the dosage at four different points in the interior of the body also at three different points on the surface. This table shows the percentage applied to each skin area and each portion of the tumor thru each of the four different ports of entry. We note that all points are receiving full dosage except point three. This was later corrected and point three brought up to 115 by enlarging the port of entry at B. In this way by using four points of entry we can give uniform dosage to a patient 10 m. thick.

Fig. 3. Illustrates uniform dosage thruout the pelvis of a patient 8 in. thick. To this uniform dosage is added a very heavy dose of radium in the cervix and in the area immediately adjacent to it. The scale at the left shows the x-ray dosage obtained thru two ports of entry. It is less than it should be at the cervix. This is the place where we need the heaviest dosage. The middle scale shows radium dosage extremely heavy in the cervical canal, fairly heavy 2 cm. away and shading off to 38 per cent at a distance of 3 cm. The third scale shows the combined dosage. If the bladder is packed 3 cm. away from the cervical canal it receives only 126 per cent, not much more than the skin surface. If it is only packed 2 cm. away, we may have some unpleasant bladder symptoms. In connection with this table I want to discuss the treatment of carcinoma of the uterus.

The first thing to decide is whether the case is surgical or not. If the lesion is confined to the uterus, it is surgical. It should be given heavy x-ray treatment thru four ports of entry without using any radium, and then should be operated on three weeks later. No iodine preparation should be used at the time of operation. Another method is to operate and use the x-ray three or four weeks afterwards. There are a number of advantages in favor of the first method. We do not suggest using radium, as it may add to the difficulty of the operation. The uterus is to be taken out and does not need the extremely heavy cauterizing dosage of radium.

If the case is inoperable, by this I mean if there is extension outside the uterus, we need both radium and x-ray, and both are equally important. Formerly inoperable cases were treated by cauterizing the cervix. This checked the bleed-

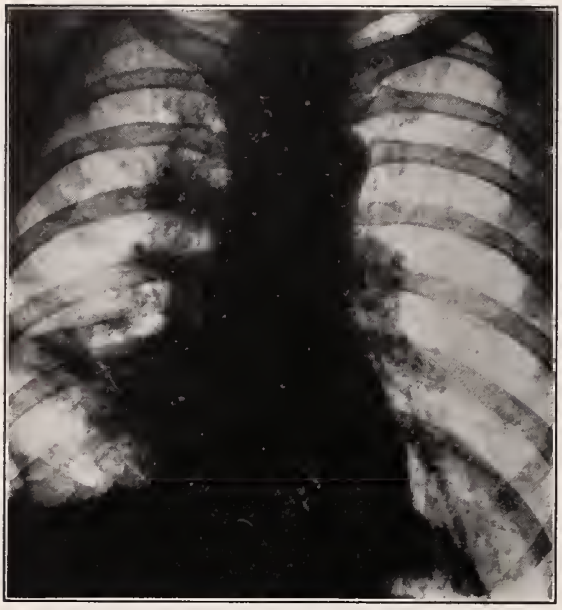


Fig. 6. Carcinoma of lung before treatment.

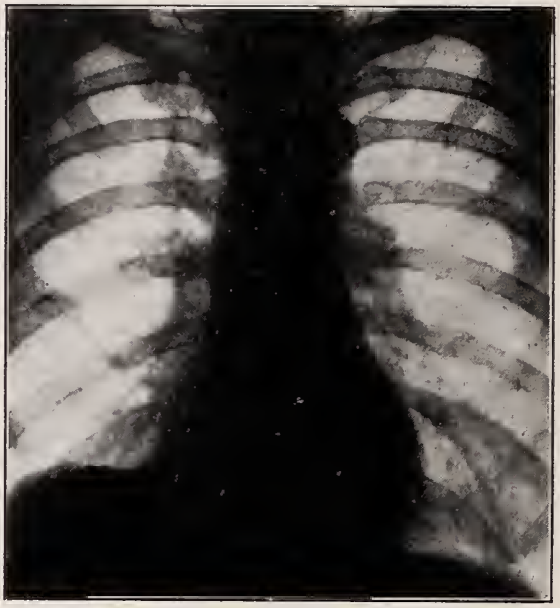


Fig. 7. Same case as Fig. 6, after treatment.

ing and relieved the foul discharge. Radium does the same thing without so much destruction of tissue and with a more penetrating action than the cautery, as it gives a knock-out dose up to a distance of at least 2 cm. This is quite sufficient to kill cancer tissue.

We should think of radium as acting in three zones: first, the cauterization zone; second, the zone of extremely effective dosage, much more effective than any x-ray dosage that can be given this portion of the body; third, the larger zone where it builds up the x-ray dosage, giving up to a little less than 5 per cent on the skin surface. We are not worried about the first zone, as it is entirely in cancer tissue. We are very particular to keep the bladder and rectum out of the second zone as much as possible. The third zone is useless and perhaps harmful, if no x-ray is used. At the same time when used with the x-ray it gives a very useful building-up dosage.

Fig. 4. This patient has carcinoma of the lung, secondary to a carcinoma of the uterus. She was referred to me by Dr. Smith, of Wallace. At this time no pelvic lesion can be demonstrated. Note the great number of round areas, some of these areas being clumped together. This woman was given homogeneous radiation thruout the entire chest.

Fig. 5. Shows the film taken five weeks later. The lower part of each lung shows slight infiltration; no complete nodules are present. This case shows the marked recession which occurs in many but not all cases under high voltage treatment. The patient showed corresponding clinical improvement.

Figs. 6 and 7. This lung does not show characteristic nodular formations. The diagnosis is made from the history of carcinoma of the right breast three years before, the fact that it has persisted for three months prior to treatment, and from the associated glandular involvement on both sides of the neck which is absolutely typical of malignancy. This patient was referred to me by Dr. A. C. Baker, of Spokane. She took a small dosage of x-ray and quit because of the radiation sickness. Later she was persuaded to take the full dosage, and was given heavy dosage on both sides of the neck, right axilla and thorax. Two weeks later all the glands of the neck were gone and the lung lesion was cleared up. This was about three months ago, and now she is doing her own house work.

In giving massive doses of x-ray and radium, we go the limit of skin toleration. Any mechanical or chemical irritation added to this may produce very unpleasant results. The physician should cooperate in guarding the skin. All chemical irritants, such as iodine, scarlet red and carbolized vaseline should be avoided.

We continually have trouble with iodine and this should not be applied to the skin two weeks before or three weeks after the x-ray treatment. Some other preparation should be used for surgery. It is also necessary to avoid mechanical irritants, such as pressure and friction, heat and strong sunlight. We do not give a bed patient as heavy a dose on the back, as on the front of the body.

In talking to the patient the physician should avoid the term "x-ray burn." It is much better to call it x-ray reaction. To get results in therapy, we must go the limit of dosage, and we can only do this safely when we have the support and cooperation of the physician in charge. The patient who has a malignancy should know it, otherwise it is difficult to get him to take the treatment after he begins to have radiation sickness.

The 100 per cent or epilation dose is useful in destroying carcinoma cells in a limited number of cases and retarding the growth in nearly all cases. In working out the charts we are mainly irterested in getting uniform radiation. After the radiation is uniform the problem becomes clinical and is no longer one of physics.

Carcinoma of the stomach requires much more than the epilation dose. We are not able to give a dosage sufficient to destroy or even appreciably retard it, because the normal bowel will not stand over 135 per cent dosage. Cystic malignancy of ovarian origin requires very moderate dosage. These cases do very well under treatment.

Cancer of the pancreas responds readily. Neck and chest malingancies usually do not respond to the epilation dose. Fortunately we are able to increase the dosage in this region. Millwee reports very favorable results in cancer of the prostate. If we pick out a number of cases that appear to be in the same group, there is a marked difference in the way they respond to treatment.

HIGH VOLTAGE THERAPY IN TREATMENT OF CARCINOMA OF THE BREAST*

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Recently we have seen a number of cases of extensive metastasis from carcinoma of the breast. This is the first reason for this paper. The second is the general interest in the new type of radiation therapy. Because my personal experience with high voltage therapy has existed for seven months only, and is therefore too recent to be of much value, a portion of this paper will be quotations from men of greater experience and standing.

What do we mean by "deep or high voltage therapy"? The term "deep" is in my mind misleading. I think "high voltage" therapy is a better term. For this therapy is valuable in the treatment of superficial as well as deep seated malignancies. The old type of apparatus developed from 90 to 140 thousand volts. The new type develops up to 280 and 300 thousand volts. The higher voltage produces a greater quantity of short waves which resemble the short hard radium rays. The comparative hard x-rays and the radium rays produce the same biologic effects.

With the newer therapy, material such as copper is used between the x-ray tube and the skin. This filters out the soft rays which are irritating to the skin, and thus lessens the danger to it. This treatment can be given for not more than two or three series.

Two fundamental laws are operative in radiotherapy:

1. A certain amount of radiation absorbed by living cells will produce their death.

2. The amount of that radiation is dependent upon the kind and character of cell irradiated.

Tissue that proliferates readily is more radiosensitive than that which does not. Normal tissues are more resistant to radiotherapy than pathologic tissues. The saturation point in radiation is dependent on the character of the cell as well as on the intensity of the radiation. When the saturation point is reached, the cells become nonresistant and inactive. The rapidity with which the point of saturation is reached depends on the character of the cell and the intensity of the exposure. It may result from a single exposure or from many. When this stage is reached involution sets in. This is absorbed by the circulating fluids and phagocytes when within bounds; and when beyond, necrosis is the result usually.

Carcinomas of the breast may be classified under five headings: (1) Primary operable, (2) primary inoperable, (3) recurrent operable, (4) recurrent inoperable, (5) for prophylaxis.

The primary and recurrent inoperable can be treated with x-rays entirely, a certain percentage of which will so improve as to become operable. The operable cases should betreated with pre- and postoperative radiation, this as a prophylactic measure.

The question of whether a case is or is not operable is open to discussion. A great many surgeons and radiologists look upon all cases of cancer of the breast in which the mass is adherent, or in which palpable or distant metastases can be demonstrated, as belonging in the inoperable class. These cases may become operable after radiation, if sufficient time is allowed. The great majority of all recurrences are inoperable. In the far advanced cases a cure is not to be expected from radiation; but the majority of these cases will obtain relief from pain and prolongation of life.

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* Read before Spokane County Medical Society, Spokane, Wash., Dec. 28, 1922.

The proper selection of cases for surgery would lessen the number of recurrences. Burton J. Lee, of the New York Memorial Hospital, says that for several years it has been the practice to use preoperative radiation in that institution. He says they feel certain that it is of great value in reducing the number of recurrences; and that, if a period of sufficient time, say two or three weeks, elapses between radiation and operation, there are no evidences of interference with healing nor added liability of wound infection.

In cases which have had high voltage preoperative radiation, with palpable metastases, postoperative radiation should follow operation within six to eight weeks. Those cases which have not had preoperative radiation should have postoperative radiation as soon as the operative wound has well healed. This applies to all cases with and without metastases. Certain recurrences will be prevented and, if recurrences do take place, they will be definitely postponed. Some recurrences will be cured, and if not, the patient will be relieved and life prolonged.

Dr. J. C. Bloodgood says, (*Jour. A. M. A.*, Aug. 26, 1922, page 703), "I have very slowly taken up the roentgen ray treatment either preoperative or after operation of cancer of the breast; but in the last few years I have written to every patient living, who was operated on for cancer of the breast in which the glands were involved, and advised treatment with the roentgen ray. My patients, whose cases are evidently malignant with retracted nipple and adherent skin, are given preoperative treatment. Every patient with involved glands is given postoperative treatment."

What can we promise our patients from radiation? A certain number will be cured, recurrences will be postponed; a certain number will be relieved and a certain number will not be helped. Percentages of the different classes can not be given, but enough will be helped or cured to make radiation well worth while. Proper selection of cases for surgery will increase the percentage of cures, and this percentage will be increased, if radiation is used.

The immediate effects from high voltage therapy are frequently spectacular and with the definite knowledge we have of help derived from the lower voltage machines, it is only reasonable for us to expect greater help from the more powerful machine. The method is well worth while, even tho the results are less than there now seems reason to expect.

James T. Case says (*Jour. A.M.A.*), "Preoperative radiation, carefully planned, will not interfere with the surgical procedure and it gives every promise of being helpful by diminishing the prospect of recurrence of the disease. Postoperative radiation is also undoubtably a help. In my own surgical work I use roentgen ray radiation preoperatively and postoperatively, when the diagnosis is established before the surgical procedure; and at least postoperatively, when the operation discloses the malignant nature of the disease."

CONCLUSIONS

1. High voltage therapy is of greater advantage and benefit than the older type of therapy.
2. All cases should be carefully examined and, if metastasis is found or the mass is adherent, radiation should precede operation.
3. All definite malignant cases should be treated with radiation before and after operation.
4. Healing is not interfered with, if operation does not follow radiation too soon, and the tendency to infection is not increased. At least four to six weeks is recommended after high voltage therapy before operating.

Tumors of the Breast—William D. Haggard and Henry L. Douglass, Nashville, Tenn. (Journal A. M. A., Feb. 17, 1923), have collected, from their clinic, for the eleven years ending Jan. 1, 1922, 255 histories of breast lesions. The findings in these 255 cases may be summarized thus: (1) No malignant tumor of the breast occurred in a woman under 27. (2) The average age of patients with cancer of the breast was 49.2 years. (3) In cases of recurrent carcinoma, the patients were five years younger than in the primary cases. (4) All sarcomas occurred in males, and constituted 2.4 per cent of the malignant cases. (5) In only one third of the malignant cases was there a family history of cancer. (6) In two thirds of the cases in which the lesions were benign, the patients gave a positive family history for cancer which probably caused them to apply for examination even though their lesions were benign. (7) The average duration of cancer before operation was twenty-six and one-half months. (8) One case in five was inoperable.

A METHOD OF INTENSIVE, SYSTEMATIC AND PROLONGED TREATMENT OF SYPHILIS AND THE IMPORTANCE OF ITS APPLICATION IN THE PRIMARY AND THE EARLY SECONDARY STAGES*.

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If there is ever a time during a syphilitic infection, when the disease can be eradicated from the system and a complete cure accomplished, it is during the six first months following the appearance of the chancre. The character and intensity of the treatment furnished by the doctor during these first months not only determines the future health of the patient, but also the future health of his family; and in many cases their descendants as well.

Can you think of any individual problem in the practice of medicine greater than this, or an individual responsibility more weighty for the doctor, or any other individual, to assume? Is there any other disease more detrimental than syphilis? One of the greatest obligations we owe to ourselves as physicians and to our patients for the protection of mankind at present and also future generations requires that we all be on the alert to detect syphilis and to treat it in a systematic and scientific manner, at a time when the possibility of complete cure is the greatest.

THE FIRST STEP

The first and most important prerequisite in the treatment of syphilis is a positive diagnosis. In either primary or secondary syphilis no form of either local or general antisyphilitic treatment should be administered to any patient until every means has been exhausted to arrive at a positive diagnosis. No sore on the genitals or any other place on the body should be dosed with mercurials, arsenicals, or other antiseptics, if there is the slightest reason to suspect the spirochete as the causative factor, until after a syphilitic infection has been ruled out.

An unquestionably positive diagnosis of syphilis is not only desirable but also essential in a majority of cases to obtain the full cooperation of the patient in carrying out the prolonged and arduous treatment necessary for the eradication of the disease after all clinical symptoms and local manifestations have disappeared. Never administer any form of antisyphilitic treatment if there is a question in your own mind that the lesion is not syphilitic. Modern laboratory methods are available to all, if not immediately within a few hours, in these days of rapid transit, and a positive diagnosis can nearly always be arrived at early in lesions where there has been no interference with antiseptic and caustic applications. All genital sores are to be regarded as suspicious because all chancres are not characteristic.

To illustrate:

Case No. 3 had a small pimple on the genitals for which he consulted a doctor who gave him some powder which cured the lesion, in 1912. In 1921 this patient brought his son for examination on account of a lump the size of a goose egg at the angle of the lower jaw. The father denied any history of venereal infection. Wassermann in both father and son was + + + +. When confronted with this evidence the father admitted that he had a small sore in 1912, but was of the opinion that it could not be syphilis because the doctor gave him some powder which cured it and only charged him $1.25. This man is an old syphilitic and has a wife and two children syphilitic. **Who is to blame?**

THE CHOICE OF THE REMEDY

There is recent literature enough to prove conclusively that mercury in any form administered in any manner whatsoever has no direct lethal effect on the spirochetes of syphilitic lesions[1]. On the other hand, it is a well known fact that after the administration of arsphenamine or neoarsphenamine, even in small doses, no spirochetes can be found in either chancre or mucous patches after forty-eight hours. In fact, darkfield examinations are usually negative within twelve hours after the dose.

From this we must conclude then that in the arsphenamines is contained the greatest spirocheticidal action of any agent yet known to medical science. This rapid lethal effect on the spirochete decides the remedy of choice to be the arsenicals for the various reasons; chief of which are that it renders the patient rapidly noninfectious and quickly relieves his distressing symptoms as well.

Of the arsphenamines there is but little difference in choice between the arsphenamine and the neoarsphenamine. In a series of experiments on the animal by Kolmer and Lucke[2], it was shown the neoarsphenamine produced less marked tissue injury than any other of the arsenicals experimented with. From this we may conclude that of the arsphenamines, neoarsphenamine is the safest.

A SINGLE REMEDY VERSUS A MULTIPLICITY OF DRUGS

If syphilis is cured more quickly by polypharmacy it is an exception in the catalog of diseases. There is an excellent argument for using remedies synergistic in action like the combination of mercury and the iodides and with this we can take no issue. When it is shown by experience and by scientific research that certain remedies are antagonistic and incompatible, we feel it unwise to use them together. In fact, we prefer not to use arsenic until mercury has had sufficient time to be eliminated from the system, and vice versa.

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* Read before Seattle Urological Society, Seattle, Wash., Dec. 20, 1922.

THE ANTAGONISTIC ACTION OF MERCURY AND ARSENIC

It has been proven experimentaly in the animal and clinically in man that mercury has a selective action for the kidney[3]. In the animal tubular, capsular, and glomerular changes were observed. It may be observed clinically in man that by the administration of mercury a nephritis is often created sufficient to result in the production of albuminuria, accompanied by casts. This condition interferes with the eliminating power of the kidney and promotes retention of waste products and other substances present in the blood capable of being eliminated by the kidney. When administering the arsphenamines we depend upon the kidney for the elimination of a large portion of the dose. If arsenic is not found in the urine in from fifteen to thirty minutes following an intravenous administration of the arsphenamines, it is a matter of concern and arsenical intoxication in some form is most sure to follow, if administration of the drug is persisted in under this condition.

As a result of scientific animal experiments and form clinical experience Schamberg[4] draws this conclusion: "Vigorous mercurial treatment is often responsible for arsenical intoxication, when arsphenamine and mercury are used at the same time. Large doses of both ought not to be employed synchronously." When a kidney is irritated and inflamed by a generous dose of mercury, how can it be expected to eliminate arsenic or even normal body waste products at capacity? Mercury and arsenic are antagonistic in their action and should not be used together[5]."

CONCERNING THE DOSE OF THE ARSPHENAMINES

The first doses of the arsphenamines should be small in every case, even in primary and early secondary syphilis.

Leredde[6] reports a case treated by himself in the primary period with novarsenobenzol, in which he administered two doses, the one at 0.30 and the other at 0.60, which were followed by a grave typhoid state and a generalized cutaneous eruption.

He also cites the following case reports:

> Dr. G. Levy publishes a case of death of a patient treated in the primary period, who had received 0.45, 0.60, and 0.60 of 914, at weekly intervals. Thirty-six hours after the third injection a generalized erythema appeared, accompanied with persistent fever, dry tongue, and death in fourteen days in coma.
>
> Dr. Spillman reports an erythema and severe albuminuria in primary syphilis, following two doses of 914, one at 0.40 and the other at 0.30. The patient recovered.
>
> Queyrat reports a case of death in the primary period, following one dose of 606 at 0.60. Nothing could be found abnormal at autopsy. Other patients treated at the same time in the same manner had no abnormal phenomena.

Scholtz[7] and Kelch showed that 0.2 arsphenamine would render condylomas and mucous patches free of spirochetes within forty-eight hours but such small doses are not curative, even when repeated at frequent intervals as shown by Ormsby[8].

To avoid all the dangers and objections above mentioned Leredde recommends the employment of neoarsphenamine in small doses at the beginning without the use of mercury at any time. The doses are gradually increased at weekly intervals as the treatment progresses, until normal doses for the individual in question are surpassed, providing the elimination of the arsenic is complete and the treatment is tolerated without severe or brutal reactions.

PRECAUTIONS TO PREVENT UNTOWARD ACTION OF THE REMEDY

Arsenic, one of the most deadly drugs known to medical science, is the active principle of the arsphenamines. It is present in arsphenamine at 30 per cent, and in neoarsphenamine at 20 per cent, approximately. A normal dose of these remedies contains more than enough arsenic to produce death by acute arsenical poisoning, if administered by the stomach as white arsenic. Some persons have an idiosyncrasy for arsenic; hence the great importance of making the first dose small in all cases.

Arsenic retained in the body will result in chronic arsenical intoxication and, if the administration of the remedy is continued over a period of time, disastrous results and even death will ensue from an accumulation of the remedy in the tissues; therefore, it is essential to know that the previous dose has been eliminated before another one is administered. Arsenic is eliminated almost entirely by the kidney and thru the alimentary tract. An examination of the urine for arsenic usually gives us the information as to whether elimination of the dose has been accomplished; however, if there is a question it would probably be wise to administer a laxative and examine the stool for arsenic rather than take a chance of producing an arsenical intoxication, which would be followed by hepatic cirrhosis, or an arsenical dermatitis, infection, and death as a result thereof.

A TEST FOR THE ARSPHENAMINES

Leredde[9] recommends the Abelin test as being practical and delicate.

For this test four solutions are required as follows:

1. Nitrite of soda 0.5 per 100;
2. Hydrochloric acid 10. per 100;
3. Resorcine pure 1. in 10;
4. Carbonate of soda 20. per 100.

In absolutely clean test tube put 5 c.c. of cold urine and add three or four drops of the solution of hydrochloric acid and three drops of solution of nitrite of soda. Shake the tube and allow it to stand until all reaction ceases. Apply a drop on amylo-iod-potassic paper with a glass rod, to see if the diazotation is terminated. If there is no nitrite of soda in excess, iodine will not be liberated from the paper. If the spot turns blue, make another test, using less nitrite solution.

In another tube put 0.3 of resorcine (5 grains) and add about 3 c.c. of distilled water (about 50 drops, approximately 1 drachm). It is important that this solution be freshly prepared, and then add 3 cc. of solution of sodium carbonate and shake. (Tube No. 1 should be prepared and ready for mixing with Tube No. 2. Tube No. 2 should be used as quickly as possible after the water is put in the resorcine. It browns by exposure to air.)

After these two tubes are prepared their contents should be approximately equal.

The contents of the first tube is poured into that of the second tube.

If there is arsphenamine in the urine, the resorcine in the solution is colored red; if not red, a mixture of red and brown. For comparison use a tube of plain urine without reagents.

We observed in doing Jaffe's test for indican that those urines giving an Abelin test positive for the arsphenamines would also give a reaction not found in those negative with the Abelin test. We believe this reaction to be a positive indication of arsenic in the urine and the test is performed in the following manner:

In a clean test tube pour 5 c.c. of urine and add 5 c.c. of fuming hydrochloric acid, Merck, and 1 c.c. of fresh peroxide of hydrogen. Shake, and add 1 c.c. of chloroform and shake vigorously. Stand the tube in the rack for 15 to 30 minutes. If arsenic is present in the urine, there will be a narrow line of deposit on top of the chloroform which will be pink in color. This color will be retained for 20 to 30 minutes or longer, in very positive cases from 12 to 24 hours. After the pink color of arsenic fades, a light yellow takes its place. The same pink line will be observed in urines, where no arsenic has been administered, but it is decolorized rapidly and does not remain longer than 10 to 15 minutes.

If iodides are present the chloroform and entire mixture will be pink but will fade and leave a pink line on top of the chloroform, if arsenic be present.

In one case, where the Abelin test was negative and the last test above explained was positive and was disregarded on account of the extreme condition of the patient, a severe dermatitis was the result of the continued administration of neoarsphenamine. This dermatitis was most severe and resisted all forms of treatment over a period of two months. An accident like this is most disagreeable and dangerous for the patient and distressing for the doctor as well. Every precaution should be used to safeguard the patient when a powerful and poisonous drug like arsenic is to be administered over a sufficient length of time to eradicate a syphilis. Arsenical intoxication is easier to avoid than it is to cure.

THE SORTING OF PATIENTS

For the purpose of treatment patients are to be divided into two classes:

1. Those who are in perfect physical condition and who are able to tolerate intensive, systematic and prolonged treatment sufficient to eradicate the disease.

2. Those who have physical defects and pathologic conditions which make an intensive and prolonged treatment more dangerous than the disease itself. Great caution should be observed in handling patients in this class. Everyone is a law unto himself and their treatment will not be considered here.

In the first class we can place only the young and the strong without a blemish of any of the vital organs; capable of taking and assimilating large doses of the arsphenamines at frequent intervals without having severe and brutal reactions. These patients are to be selected by observation, physical examination and by trial doses of the remedy.

THE SIZE OF THE DOSE OF THE ARSPHENAMINES

The first dose in every case should be small, even in the robust. By this procedure we are able to discover those who have an idiosyncrasy for the remedy in time to avoid dangerous or disastrous reactions. The doses following are to be gradually increased until the normal dose is reached and surpassed, if there is no untoward action; providing the elimination of the arsenic is complete during the interval between each dose.

THE INTERVAL BETWEEN THE DOSES OF THE ARSPHENAMINES

In a normal individual it requires an amount of the remedy ten times larger than the normal dose to produce a lethal effect. In other words it would require at one dose, ten tubes of neoarsphenamine at 0.9 to kill a normal man weighing 60 kilos or 120 pounds; consequently we would be able to administer to a normal man weighing 120 pounds 0.9 neoarsphenamine each day for a week without killing him. Measures like this are dangerous and are uncalled for and are not recommended.

When the patient is in the primary or early secondary stage, we deem it safe to make the first dose at 0.15 or 0.30 and this dose may be repeated in five days or a week at 0.30 or 0.45, if the patient is robust. The interval between the doses following should be one week, providing the reactions are not severe and elimination of the arsenic is complete. If the arsenic is not eliminated the dose should be postponed until the urine is free of arsenic. To do otherwise is to court trouble. If the patient becomes arsenic-fast, so to speak, chronic arsenical intoxication will be produced in the patient before the spirochete can be eradicated by the arsphenamines and it then becomes necessary to use some other form of treatment, for a while at least.

THE NUMBER OF DOSES TO CONSTITUTE A COURSE

Eight to ten doses should be given in the first course and the total amount of neoarsphenamine should be from 5 to 10 grammes. In the succeeding course four or five doses should be administered and the total amount of neoarsphenamine should be from 2.5 to 5 grammes. No mercury or other antisyphilitic remedies should be administered in the interval between courses, and the patient should observe all the rules of hygiene.

Intensive treatment as herein outlined must be administered with extreme caution, the patient must be frequently observed, and the remedy must be well tolerated, otherwise it should be abandoned before it is followed by disastrous results.

THE INTERVAL BETWEEN THE COURSES OF TREATMENT

We must presume from clinical observation that the spirochete passes thru its reproductive cycle once in twenty-one days. The chancre usually appears in twenty-one days after exposure and in twenty-one days after the appearance of the chancre the secondary eruption begins to appear. The interval between courses of treatment should be calculated to prevent a reswarming of the spirochetes. If all the spirochetes are not killed by the first course of treatment it is presumed that there will be a new crop in twenty-one days after all arsphenamine is out of the blood stream.

It is impossible to determine how long the liver stores arsenic in each given case; and how much of it is passed into the blood stream; but, if there are no indications otherwise and the previous course of treatment has been well supported, we make the interval between the first and second courses of treatment two months. This gives time to observe untoward action of the remedy and allow the liver, kidney, and other eliminating organs to clear themselves of the drug. At the same time a reswarming of the spirochete will not have time to occur on account of the arsenic previously stored in the tissues. If the old forms of the spirochete become resistant to the remedy and refuse to be killed by it, then it might be required to allow them to die of old age and at the same time to keep the young ones killed off by an intermittent treatment prolonged.

WHEN INTENSIVE TREATMENT SHOULD BE ABANDONED

Intensive treatment by the arsphenamines in any patient should be abandoned, when he first exhibits any of the symptoms of chronic arsenical intoxication, even in the mildest form. Long rest periods should be given and the size of the dose materially reduced if this remedy is to be used. Severe reactions and deaths following the first or second doses can be avoided by making the first doses small and by not administering the doses following until the elimination of the previous doses is completed.

To avoid chronic arsenical intoxication:

1. When intensive treatment is being administered, we must know that accumulation of the arsenic is not taking place in the patient.
2. Examine his urine for arsenic twenty to thirty minutes after the dose and see if his elimination is in progress. Examine the urine immediately before each dose for albumin, sugar, arsenic, etc.
3. Do not increase the dose, if the reactions from the former dose were severe; if the reactions were brutal, the dose should be diminished by one-half.
4. Stop with the first patchy dermatitis or toxic erythema.
5. Stop with the appearance of an albuminuria.
6. Stop when there is any sign of hemophilia present, frequent nose bleeds, bleeding from the

gums, purpuric spots, etc., and test the coagulability of the blood, and take blood pressure.

7. Do not administer when there is an acute intercurrent disease or a severe cold present.

8. Proceed with care when the weight is being reduced below standard for the individual.

9. Stop when jaundice appears and administer remedies for arsenical intoxication. A jaundice occurring early in treatment is produced by a Herxheimer reaction and will usually clear up by further administration of the remedy.

10. Be cautious with intensive treatment in patients over fifty years of age.

11. Stop with the first appearance of edema as evidenced by puffiness of the eyes or pretibial pitting on pressure.

12. Stop upon appearance of the sensation of tingling of the fingers, hands or feet.

CASE REPORTS

Case No. 321 illustrates a treatment not well tolerated. Neoarsphenamine.

1922	Wt.	Dose	Reaction
10	118	.30	No reactions.
17	119	.45	No reactions.
28	118	.60	Headache, nausea, diarrhea, leg pains.
May 2	118	.15	Syphilide on face. Blood + + + +
31	118	0	Arsenic in urine.
June 7	118	.45	Nausea and leg pains—face cleared up.
14	119	.60	Nausea and leg pains.
21	120	.75	Nausea and leg pains.
28	118	0	Arsenic in urine.
			Rest period one month.
July 29	119	.30	Headache and nausea.
Aug. 5	121	0	Patchy dermatitis on wrists; arsenic in urine. Alkaline treatment.
Sept.19	120	.15	Dermatitis reappears.
Oct. 3	120	0	Leg pains, arsenic in urine.
11	120	.15	Leg pains.
Nov. 7	117	0	Patchy dermatitis, Art. ten. S 100; D 80. 120 pulse. Arsenic in urine, albumin + + + +
29	112	0	Arsenic in urine, albumin, + + + +
29	112	0	Arsenic in urine, albumin, + + + +
Dec. 2		0	No tube casts.

Case No 284 illustrates a treatment well tolerated, and demonstrates the importance of early intensive treatment until the disease is completely eradicated clinically and serologically. Neoarsphenamine.

1922	Wt.	Dose	Reaction
Feb. 27	180	.30	Fever 3 days; chills. Blood + + + + Dil. 1-160.
Mch. 6	180	.45	Indican in urine.
13	179	.60	Nausea, vomiting, Indican in urine. Art. tens. 120.
20	179	.75	Indican in urine. Art. tens. 110.
27	181	.90	Nausea, indican +.
Apr. 3	180	1.05	Art. tens. 105.
13	177	1.30	No reactions.
20	179	1.35	Headache, nausea, vomiting, Art. tens. 105.
May 1	180	1.50	Art. tens. 105.
8	180	1.50	No reactions.
			Rest three weeks.
June 2	178	.30	Art. tens. 140. Blood negative Wassermann.
10	179	.60	Art. tens. 100.
17	178	.90	No reactions.
24	180	1.50	No reactions.
July 1	179	1.50	Diarrhea.
			Rest six weeks.
Sept. 9	184	.60	No reactions.
16	187	.90	No reactions.
30	188	1.20	No reactions.
Oct. 14	188	1.50	Nausea.
Dec. 2	186		Spinal puncture. S. F. 2 c.c Neg.; 1 c.c. Neg.; 0.5 Neg. Cells 3.25. Gold Sol. Normal. Globulin negative, alb. + + blood negative Wassermann.

THE RECORDS OF THE CASE

He who undertakes the treatment of a chronic and unmanageable disease like syphilis with powerful and poisonous drugs like arsenic and mercury must necessarily keep a record of the case, doses administered, the intervals between doses, the reactions produced, and the laboratory findings from time to time. It is important that the patient take a copy of this chart when he has occasion to change physicians.

SPINAL PUNCTURE

Treatment should not be discontinued in any case until the spinal fluid has been found normal serologically, chemically and cytologically; and the blood normal serologically.

The Wassermann should be negative with ice box fixation on three dilutions, viz., 0.5, 1.0 and 2.0 c.c., using the cholesternized antigen and as many others as may suit the fancy of the doctor. The test should be started on the day that the spinal fluid is obtained, the blood as well, as it has been observed that in treatment cases only, a sample of blood will be positive when first obtained; but if allowed to stand for a day or two it will turn negative.

Spinal puncture is a simple operation and does not require hospitalization or even staying away from work, if a small needle, gauge 24, with a sharp point is used in performing the puncture.

This subject will be handled in detail in a communication in the near future.

Case No. 46, received 6 doses of 606 in 1911, and was pronounced cured of his syphilis. In 1918 he began to have failing vision and an unsteady gait. A Wassermann was done on the blood and found negative. He was treated for this, that, and the other thing until 1920, when a spinal puncture was made and a degenerative lesion of the spinal cord and of the optic nerves was found to be definitely due to a syphilis. His vision is now 9-10ths gone and his locomotion extremely poor. He responds poorly to treatment and his case is almost unmanageable. Until a new order he will never be any better, at least his vision will never improve because the optic nerves are beyond any hope of improvement. They are partially dead and can never be regenerated.

Case No. 408. Had his chancre in 1912, received two doses of 606 and was pronounced cured. Married in 1913. First child born in 1915. She had a hemiplegia in the fall of 1921. The patient developed tabes about two years ago and is now markedly incapacitated to perform his work.

These cases serve to show the importance of treating syphilis until it is cured, not only that but until we know it is cured. Who is responsible for these extreme conditions? Is it not the doctor himself?

THE IMPORTANCE OF USING EXTREME MEASURES TO ERADICATE SYPHILIS

The United States now contains approximately 2,700,000[10] adults, carrying some grade of syphilitic aortitis and these figures, tho startling, are quite in correspondence with those of other highly civilized and Christian countries.

When we observe the numerous individuals incapacitated with tabes and spastic spinal paralysis; that our institutions for the blind are filled with people suffering from primary optic atrophy, interstitial keratitis and chorioretinitis syphilitica; that a large percentage of the population of our insane asylums are suffering from paralytic dementia; and since Warthin[11] has demonstrated by scientific methods the presence of the spirochete and its pathology in 40 per cent of a series of cases autopsied by him—these cases coming from all walks of life; when we observe that 70[12] per cent of the offspring from an active syphilitic father or mother dies before they are one year old; and when we can demonstrate that a majority of congenital deformities[13] of every nature are caused by the spirochete, we should appreciate the importance of eradicating syphilis early in its course.

The difficulty of complete cure accrues with the duration of the disease. Consequently we should treat every individual with an early syphilis so that we can approach him at any time in the future and have him realize that we did our full duty.

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PULMONARY SEQUELAE OF ORAL AND NASAL OPERATIONS*

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A comprehensive review of the recent literature on complications of the lungs following surgical operations of the nasal cavities, throat, and investing tissues of the teeth justifies the following conclusions as to the various factors which enter into the complications, the discussions pro and con as to the method of anesthesia to be used, the various sequelae, the percentage of cases and the mortality statistics as the result of observation by eminent physicians.

The more frequent pulmonary complications[1] are classified as pulmonary abscess, lobar and bronchopneumonia, bronchitis, pleurisy, empyema, infarction, embolism and the less acute conditions, bronchiectasis and pulmonary tuberculosis.

The operations most frequently stated to be followed by pulmonary abscess are tonsillectomy, operations in the nasal cavities and other tissues of the throat and neck, adenectomy, extraction of teeth and operations within the mouth and also operations within the abdominal and pelvic cavities. Tonsillectomy heads the list of operations which cause postoperative complications whether pulmonary or otherwise, and acute abscess of the lung the most frequent and the most to be dreaded of the lung conditions.

The causes mentioned as responsible for infection[3] are anesthesia, aspiration of infectious material from the mouth, blood or pieces of tonsillar tissue; embolism, or infarction in the lung; some special infective agent, and some antecedent cause. To these may be added trauma, sepsis, the mobility of the parts, motor driven anesthesia apparatus, infection thru the lymphatics, swabbing or tampering with the throat after enucleation has been accomplished, inhalation of a portion of a tooth, etc.

Congestion and stasis[4] may occur in the lung from failing circulation, or as a result of deflation of the lung from collapse or from fixation of the diaphragm, no one cause being operative to the exclusion of others. All these factors would tend to prepare the soil for a new infection or for the spread of one previously existing, as, for example, bronchitis, and probably indirectly tuberculosis.

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The favorite site of lesion[5] is found to be the right lung, either the middle or lower lobe being involved.

The method of anesthesia has been a subject for much discussion. Anesthesia should not bear all the blame for postoperative complications, as they occur whether local or general anesthesia is used, or none at all. Special preventive measures should be taken in all cases.

It is claimed that the employment of local anesthesia operates to avoid complications[5]. First, it removes the possibility of aspirating infective material.

Second. It produces a marked constriction of the lymph and blood channels in the field of operation, thus preventing the introduction into the circulation of infective emboli.

Third. It reduces general shock and general ill effects which always ensue to a greater or less degree after general anesthesia, particularly ether.

The general anesthetic, ether, itself is an irritant and if general anesthesia must be used the choice is nitrous oxide[4]. For older children and adults the use of local anesthesia is preferable. There are those who prefer general anesthesia.

For tonsillectomy, much depends on the preventive measures taken. Careful examination of the patient[7], that there is no fresh tonsillar infection, no acute respiratory disease, that patients of all ages should be in the best of health aside from the tonsillar condition.

Chilling of the patient is an important factor. The operating room should be adequately heated; all foreign matter, such as "cheesy" masses should be removed by pressure: curette and suction before starting tonsillar dissection, and all detritus should be removed from the tonsillar crypts before beginning operation. According to some writers the position of the patient possibly has very little to do with the production of the complications. However, this is considered important by other operators[8].

Postoperative measures should be well considered, postoperative examination of the lungs. Rest in bed under medical supervision and deep breathing, according to some should be encouraged.

Loeb[2] makes the point, "To operate and then consign the patient to inexpert hands can have no justification. A better surgeon is required to supervise the aftertreatment than to perform the operation." These conditions may be ideal, but are not always feasible.

Notwithstanding every precaution, statistics show[1] that pulmonary complications following operations is close to 3 per cent of all cases operated on. (These figures appear to be high.) The farther from the respiratory portion of the abdomen[9], the less frequent the lung complication. However, the percentage bears no fixed rate.

Dr. Moore[8] quotes figures from a questionaire. "In 450,000 records of tonsillectomy, abscess occurs once in from 2,500 to 3,000." He also gives an analysis of 202 cases of pulmonary abscess following operative work about the upper air passages, the main points being as reviewed thru this summary.

Hare[11] emphasizes two points: Conservatism in dealing with patients who are desperately ill, and the fact that many patients obtain relief by rupture of the abscess into the large bronchial tubes, which is nature's method of drainage.

Statistics[4] seem to show that, irrespective of the operation performed or the anesthetic employed, one patient in every 150 or 175 operated upon dies as a result of postoperative pulmonary complications. Moore[8] maintains that mortality from pulmonary abscess following operations about the upper respiratory passages is much lower than generally given for pulmonary abscesses from all causes. Fatal cases are divided between pneumonia, pulmonary embolus, abscess and edema.

Cutler[1] holds that in operations on the mouth, face and neck, the use of local anesthesia has undoubtedly cut down the morbidity and mortality percentage, unquestionably due to two factors: (a) the lessened chance of aspiration with a slow, clear dissection under local anesthesia, and (b), the greater ease in obtaining an aseptic field, when the apparatus of inhalation anesthesia is out of the way.

Cutler[1] and Hunt[23] make reports based on observation of 1,604 cases and review of literature. They conclude that "postoperative pulmonary complications are due, in the majority of cases, to embolism from the operative field. The result is pulmonary infarction or fatal pulmonary embolism." (Disagreeing with the majority of writers.)

McCain[12] (Sanatorium N. C.), quotes Weller, University of Michigan: "Histologic examination of material from 8,697 consecutive cases of tonsil operations showed active tuberculosis in 2.35 per cent." Other writers report from four to five per cent of deaths from all causes show local tuberculous condition in tonsils. Several authors report 69 to 80 per cent of patients who die from tuberculosis have tonsils infected.

Slow recovery from pulmonary abscess[10] after long convalescence is usual, but operative intervention has sometimes been necessary; opening and draining the abscess, and the use of antiseptic solutions or resection of the lung. Artificial pneumothorax is regarded by some as probably the most effectual measure in treatment.

Other than surgical conditions contribute to the production of pulmonary abscess and should be borne in mind. These may follow acute infections, especially of the upper respiratory tract. Pulmonary abscess probably occurs more commonly than has been recognized. Less attention has been given to infections of the dental tissues in connection with the production of pulmonary abscess, but they may play a more important role than we have thought. They are regarded as being important causative factors in bronchiectasis.

The influence of operative processes on foci of infection of the upper respiratory tract and the investing tissues of the teeth as determining factors in reactivating pulmonary tuberculous conditions is not of infrequent occurrence. I am thoroly convinced of the harmful influence of their existence in the tuberculous case, in retarding or preventing arrestment; also of the dangers attending the removal or treatment of the infected foci, if too extensive operative procedure is performed.

The following is an incomplete report taken from two years of the records of my office regarding tonsil infections:

Of 776 patients examined consecutively, who sought advice because of the existence of pulmonary symptoms, 159 gave a history of having had their tonsils removed. In most cases the operation was followed by improvement of the general health; a few observed no change, while 21 claimed they had not felt so well since the operation. Of these, six gave definite history of the existence of symptoms of an active tuberculosis condition at the time of operation; seven gave history of continuously increasing symptoms of ill health, until active tuberculosis was diagnosed. In one the operation was followed by abscess of the upper lobe of the right lung.

Of those operated upon, less than 3 per cent claimed to have had symptoms increased and less than 2 per cent claimed the operation to have been a determining factor in the reactivation of a tuberculous condition. In a number of these cases there existed evidence of lack of skillful performance of the operation.

Ether anesthesia was used in five (25 per cent) of these cases.

The following is the result of operations upon patients by my associate, Dr. C. Benson Wood: Forty-two tonsil operations were performed under local anesthetic in the past year and one-half; 26 known tuberculosis patients, of whom 20 known improvement; 6 have not received recent report; no known undesirable results.

These cases have been carefully selected with regard to the urgency of the demand for the operation. The patients have been kept under observation and treated as indicated, so as to reduce the infectious material contained within the tonsils to the minimum.

Dr. Wood, at my request, has furnished me the following technic used in producing local anesthesia:

LOCAL TONSIL OPERATION

Anesthetic—Novocaine 1 per cent, with adrenalin, 1-1000, 6 min. (4 c.c.) to 10 c.c. novocaine (about 8 c.c. used for both tonsils.)

Inject slowly, with a small needle.

Five points of injection.

1. Thru the anterior pillar, opposite the plica triangularis, down to but not into the capsule of the tonsil.
2. At the juncture of the upper and middle third of the anterior pillar.
3. In the supratonsillar space.
4. Into the middle third of the posteroir pillar (anterior surface) under the mucous membrane only.
5. Into the lymphatic tissue at the base of the tonsil.

Care should be taken not to carry the needle into the tonsillar tissue, to inject slowly and not too deeply. It is my practice to inject one tonsil and remove it then inject and remove the other.

The knowledge of the influence of infection of the investing tissue of the teeth has increased rapidly during the past few years, but is as yet imperfectly systematized.

I wish to call your attention briefly to the influence of these infections on tuberculous conditions. The pathology of tuberculosis may be briefly, for our purpose, summed up in the one word, *scar*. The primary infection produces a tubercle which is an infected microscopic focus, incapsulated within a scar; an aggregation of tubercles forms a larger focus with its fibrous or scar tissue—an arrested tuberculous focus.

Reactivation of this focus most frequently oc-occurs either thru pathologic changes which occur within the scar, as caseation and softening or thru the action of an external stress, as mechanical violence or bacterial stress, or the combination of all.

When we consider the prevalence of latent foci of tuberculous infection in the lungs, the frequency and extent of the infected foci of the investing tissues of the teeth and the channels of communication between these areas, it is not difficult to appreciate the possibility of the influence of these infections on the pulmonary foci.

When we consider the protective barriers of the tissues, chemical and mechanical, which serve as a protection; added to these, the comparatively slow development of activity of the tuberculous focus, then we may appreciate the apparent infrequency with which this reactivation occurs. However, the constant absorption of the toxins from these foci lower resistance and, if a large amount of the infectious material is thrown into the system thru operative procedure, the condition becomes favorable for reactivation of a latent focus or will materially interfere with the favorable progress of an active process toward recovery. I have not had an opportunity to collect data in regard to this, but am more and more impressed with the importance of these conditions, as I have greater opportunity for observation.

I also am more and more impressed with the necessity for careful consideration of treatment of these infected foci. The extent of these mouth foci and their care is well set forth in the following from Gardner[16]:

"During the year approximately 28,000 patients were examined. Of these, 30 per cent had roots left following extraction; 4 per cent impacted or unerupted teeth; 3.5 per cent residual granulomas. Oral infection cannot be eliminated by extraction alone. Treatment of pyorrhea and thoro prophylaxis are often necessary.

Great care should be exercised regarding the number of teeth extracted at one time and the length of time between operations. There should be a limited amount of scaling at the first appointment and it should not be repeated for several days.

1. Dental report should be based on roentgen ray and clinical evidence.
2. Cooperation between medical and dental profession is necessary.
3. Do not make promises regarding the outcome of extractions.
4. The extraction of teeth by simply pulling is not adequate or justifiable.
5. Alveotomy should be encouraged with proper restrictions."

I wish to emphasize the importance of early recognition and treatment of extraosseous infections, as well as intraosseous foci.

The treatment of a small area at one sitting and that the least possible amount of trauma be produced.

Allow time for the patient to recover completely from the results of the infection between treatments.

Extract only one or two teeth at one sitting, allowing time for recovery. The danger may be reduced by treatment of the infected foci before extracting.

Timely articles have recently appeared in NORTHWEST MEDICINE by Drs. Kenelem Winslow, Frank St. Sure and Charles H. Sprague.

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PYELITIS. SOME CLINICAL RELATIONSHIPS*

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Pyogenic infections of the kidneys and their pelves, under whatever names one classifies them, so often have the same etiologic factors and the clinical findings may so closely resemble one another that for the purposes of this paper one may use the term pyelitis rather broadly, since any extensive argument as to etiology or nomenclature is not contemplated. It is assumed that various forms of inflammation may, and often do occur together, or at least one follows or fuses into another, as one stage of a pathologic process in the kidney merges into another. There is so much in the literature concerning the minute pathology, so many authorities for this or that nomenclature and such complete reports of investigations concerning the etiology and modes of infection, all of which at times have been somewhat contradictory, that the clinical importance of pyelitis has been somewhat neglected. To the clinician the problem always is, "what possibilities must be considered in arriving at a diagnosis."

This paper is an effort to place before you some of the clinical relationships of pyelitis, including its subsequent stages. In 1911, the writer presented a paper on pyelitis in children, in which the commonness of the condition was pointed out. It was also noted that the symptoms were so little understood as to interfere seriously with its recognition . During the succeeding years I have been more and more impressed with the truth of that contention and my interest has not subsided, altho since the early study the roentgenologist and urologist have come greatly to the assistance of the clinician in its diagnosis and treatment.

The etiology of kidney infections cannot be discussed at length. One cannot, however, refrain from mentioning the selective action of microorganisms as conclusively proven, for instance, by Rosenow and associates. These gentlemen have actually produced renal calculi in healthy dogs by the production, artificially, of apical dental abscesses. These experiments have been checked and repeated sufficiently often to justify the opinion that selective action does occur. In our own laboratory, following out this idea, we have repeatedly injected guinea pigs intraperitoneally with urinary sediment from cases of infection in the urinary tract, and have reproduced in practically 100 per cent of inoculated animals lesions identical in location with those in the patients. Altho this has seemed suggestive, we have not sufficient data as yet to warrant a conclusion. Rosenow, Bumpus and Meiser in their work emphasize the point that they were unable to produce in animals any renal lesions from patients whose urine showed only colon bacilli.

One other etiologic factor worthy of brief notice is what Berlin refers to as anatomic and postural environments of the kidneys in men, calling attention to the fact that the long axis of the kidney is parallel to the long axis of the body and in the erect posture is perpendicular, in which position drainage is not free.

Pyelitis is of frequent occurrence in children and its tendency is to become chronic. Goppert, of Berlin, stated long ago that 1.1 per cent to 1.2 per cent of all children coming to his clinic have pyelitis, and from a study of 120 cases concluded that 20 per cent die entirely because the condition is not recognized until it is so far advanced as to be almost hopeless, altho it has existed for years. Friedenwald, of Baltimore, and Still, of London, many years ago called attention to the frequency with which children are affected by this disease.

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There are two conditions which must be considered in all cases of temperature of obscure origin in children: otitis media and pyelitis. There is one condition which must always be suspected in children with obscure abdominal symptoms, i.e., pyelitis. Dr. Richard M. Smith, writing of his observations at the Massachusetts General Hospital, calls attention to the frequency with which pyelitis in children begins with gastrointestinal symptoms, nausea, vomiting, diarrhea and pyrexia, with late or no urinary symptoms, negative physical examination, and finally with early negative urinalysis. Subsequent examinations, however, reveal pyuria.

Case 1. Illustrating the obscure symptomatology of pyelitis in infants. G., female, age 15 months. Instrumental delivery. Strong normal baby, weight at birth 8½ lbs. Nursed three months, then put on modified milk. Normal progress except moderately constipated.

Present illness began one week before the writer was called in consultation. Attack characterized first by pyrexia, nausea, vomiting and diarrhea. Diagnosis of illeocolitis had been made early and appropriate treatment instituted. Physical examination of this patient was negative. Urine, however, showed presence of pus and many motile bacilli.

Illustrative of the chronicity of this condition in children is Case 2, female, age 6 years. Normal until age 2, except constipation, when she had a "bilious attack" with pyrexia and vomiting. In spite of frequent recurrences over a period of four years always with medical attendance, the diagnosis of bilious attacks was unassailed. When, however, the urine was examined the third time, immediately following two negative specimens, pyuria was demonstrated.

Showing the ultimate damage which may result if the little patient survives long enough, Case 3 is interesting. J., male, age 12. Early history normal. After the age of four years he had a number of attacks of indefinite illness, characterized by fever. Late years has been underdeveloped and delicate. Has looked pale and washed out for a year. No urinary symptoms. No digestive disturbance. Chief complaint is lassitude. Appearance is anemic and undernourished.

Examination negative above the diaphragm. In the abdomen there is a definite mass in the right side which seems longer and a little larger than the finger. Slight tenderness in the right kidney region, which kidney is easily palpable. Blood shows secondary anemia with mild leucocytosis. Urinalysis shows presence of pus in abundance. Diagnosis of pyonephrosis confirmed by x-ray and cystoscopic examination.

At operation by Dr. Whitacre the right kidney was found enlarged, deformed, and pathologic in every respect. The ureter was greatly thickened, distended to the size of one's thumb and filled with pus. The kidney was removed, as was the ureter down to the cystic junction. Uneventful recovery.

In pregnancy pyelitis may prove a serious complication. During the fifth month the uterus assumes considerable size and especially in women with strong abdominal walls normal anteflexion is prevented. Thus the uterus is maintained in an erect position and is forced down against the pelvic brim, encroaching upon not only the large intestine but upon one or both ureters. This impediment to the passage of intestinal contents causes stasis and constipation, with consequent decomposition and multiplying of colon baccilli. The same pressure on the ureter causes distention of the renal pelvis with lowered resistance, so that colon infection is invited.

The symptoms are usually pain in the region of the kidney, chills, fever and vesical irritability. The diagnosis is not difficult, if the possibility of pyelitis is constantly in mind. An appendectomy or cholecystectomy is hardly a justifiable procedure in the latter months of pregnancy before first eliminating the kidney from the possibilities by a more or less complete urologic study.

An illustrative case of pyelitis of pregnancy is Case 4. Mrs. M., age 27, multipara, no history of former pyelitis. First seen during the sixth month, at which time she was without symptoms, altho the urine contained many pus cells and motile bacilli. One month later she was taken rather suddenly with pain radiating across the back at the level of the kidneys, chills and fever. Four days later there was tenderness in the right kidney region with muscle spasm. The urine contained an abundance of pus. She ran an irregular course for a month, at the end of which she gave birth to a living and apparently healthy eight-months baby. Both did well and left the hospital two weeks later. One month afterwards the urine still contained considerable pus, altho there were no symptoms.

The pyelitis of pregnancy may be so mild as to cause no symptoms or so severe as to destroy the life of the fetus and threaten that of the mother. Nephrectomy is not uncommonly necessary as a life saving measure.

In apparently acute surgical abdomens pyelitis must be considered, and in this connection are some of the most interesting cases. The important point to the clinician in these is in deciding whether first to refer the case to an urologist or direct to a general surgeon. There are so many cases on record, where needless surgery has been done, that every diagnostic group is now combining the knowledge and skill of the surgeon and urologist with that of the clinician in this class of cases in an endeavor to avoid errors of diagnosis and judgment.

Showing extremes on the operative side is mentioned Case 5. This case also probably illustrates as well as any what mistakes in diagnosis may attend "bride's pyelitis." Female age 36, housewife, chief complaint nausea at indefinite periods after eating with vomiting at least once a day. Has lost more than thirty pounds in weight, complains of nervousness, sleeps poorly and is annoyed by ordinary social duties. Onset about eight years ago.

History: Was never ill until a short time after marriage (husband a doctor). Illness began with pain in right side, does not recall its being localized. There was associated nausea, vomiting and temperature. Distinctly recalls bladder irritability at this time. Another doctor called and a diagnosis of acute appendicitis was made. Appendectomy, followed by recovery without complications.

Improvement amounted to relief of acute symptoms but nausea and vomiting and right sided pain continued. The pain was now higher and kept her awake at night at times. Lost much weight. At the end of about a year she was operated on for gall-bladder disease, drainage of the gall-bladder, no stone found. Result, no improvement. About eighteen months later had a gastroenterostomy. Result, worse if anything, certainly no improvement. About a year later consulted a noted gynecologist and had both tubes and the uterus removed. Result, stomach symptoms worse; nervousness much worse. They now decided something had to be done and went to an Eastern city, where her gastroenterostomy was undone and "adhesions" were broken up. Result, worse. Spent several months in a N. P. sanatorium with no marked improvement. She now went to another Eastern metropolis, where another gastroenterostomy was done with no benefit. The pain grew gradually worse and she vomited daily.

At this time she entered the service of Dr. George Armstrong, in Montreal, who, after prolonged study, turned her over to the urologic service with the facetious remark that, "What's left is surgically normal." At this time, eight years after the beginning of her illness she was nervous, emaciated, complained of nausea, vomited without definite relation to food, had pain in her right side from gall-bladder region to iliac fossa.

Her physical examination was negative, aside from indefinite tenderness over the whole abdomen with here, there and yonder a scar; no definite renal tenderness was elicited. Urinalysis showed pus cells present. Cystoscopic examination: congestion and slight pouting of right ureteral orifice. Urine from the left kidney normal; from the right it showed pus and epithelial cells, and cultured colon; no acid fast bacilli in either kidney. X-ray showed definite hydronephrosis of right kidney and left kidney normal. Diagnosis: right hydronephrosis, infected. Right kidney removed. Result: Left hospital in six weeks free from all symptoms and thirty pounds heavier. Two years later, well and strong. Conclusion: probably began as bride's pyelitis.

Again, it not infrequently happens that apparently acute surgical abdomens are not operated on on account of some physical or laboratory finding suggesting an alternative.

Case 6 illustrates this point nicely. Seen in consultation with Dr. Whitacre. Female, age 41, housewife, married eleven years. Health not impaired until three years ago when, following injuries of childbirth, developed vesicovaginal fistula. Operated on six times and finally cured one year ago. Had pus in urine for several months after last surgical procedure.

Present complaint began one week ago with depression, chills, fever and malaise; promptly became very sick. Got gradually better until yesterday seized with severe left sided abdominal pain, followed by high fever, prostration, with generally sensitive and distended abdomen. An attempt was made to remove her by ambulance a distance of fifty miles to her home city, but she became too ill to continue and was taken to the Tacoma General Hospital.

Examination by Dr. Whitacre showed signs of recent upper respiratory infection, some suspicion of a pneumonia from interpretation of x-ray. Abdomen very flesby, tense and exquisitely tender over left quadrant, tenderness also over both kidneys. Bimanual pelvic examination shows uterus of normal size and position, right ovary and tube normal. On the left side there is an indefinite, highly placed mass quite above the pelvis. Nothing in the cul-de-sac. Urine shows presence of albumin and pus. Blood count gives a leucocytosis of 45,000 with 91 per cent polys. In consultation the writer could not confirm the x-ray suspicion of pneumonia.

Cystoscopic report: Examination shows a bladder very greatly distorted by former operations. Both ureteral openings were hard to find but normal in appearance, and easily catheterized. The base of the trigone was very much injected. Bladder capacity 10 ounces. Urine from the right kidney was negative but that from the left contained considerable pus and motile bacilli. On culture proved to be colon. Diagnosis: Pyelitis following influenza.

Recovery was prompt and now six months later there has been no recurrence. Comment: With the physical findings, plus the marked leucocytosis and large percentage of polys, the picture was that of a surgical condition demanding prompt operative relief.

In considering abdominal tumors, kidney must be borne in mind. While an early pyelitis does not cause tumor, yet its remote effects may. In this connection the writer recalls a case seen in consultation with Dr. Mattson, in which the presence of a tumor in the left hypochondrium was confirmed but in which case the diagnosis was not completed.

Case 7. Male, age 53, single, chief complaint stomach trouble. In early life had a poor stomach and was told he had starchy indigestion. Aside from this and being always underweight, he has enjoyed pretty good health until four months ago he felt cold all the time and had increasing amount of "gas in stomach." Feeling of distress often awakened him in early hours of the morning. During the day has fleeting abdominal pain. Never tried soda for temporary relief. Gaseous distention at its height two or three hours after meals. Sour stomach a frequent complaint, never vomits or belches, keen appetite, no qualitative food trouble. Lately has a tendency to be constipated. No urinary, cardiac or pulmonary symptoms. Has lost only a few pounds. Twice diagnosed cancer of the stomach, and operation advised but rejected.

Examination: Skin sallow, several suspicious crowned teeth, chronic inflamed and scarred tonsils, chest negative. In the abdomen there is a small palpable mass size of lemon, in left hypochondrium, presenting at costal arch. Knee jerks exaggerated, blood pressure 95—60. Blood and urine negative. X-ray report: Old closed apical pulmonary lesion and "on the descending portion of the greater curvature of the stomach, extending about 7 cm. and 3 cm. into the barium there is a shadow giving an irregular finger print filling defect." Diagnosis not completed. Operation at this time not advised.

The subsequent history of this case is, first, that of the busy professional man intolerant of delay in diagnosis, in his home town, who shortly went to a large clinic in the Middle West. There he was observed over a period of two weeks before a conclusion was reached. After five negative urinalyses, along comes the sixth with pus present. Following this a urologic study demonstrated a "dead kidney," following the removal of which recovery was prompt.

Comment: Our misfortune in this case was having too little opportunity for observation and our mistake was in attaching too much significance to one negative urinalysis.

When a patient presents himself with digestive disturbances and a 90 per cent gall-bladder history and on examination there is found right sided tenderness, greatest over the gall-bladder, the surgery nurse is usually notified. It is quite possible for a pyelitis to cause all the symptoms and signs of gall-bladder disease either acute or chronic.

Simulating very closely an acute gall-bladder is Case 8. Male, age 37, occupation auto driver. Chief complaint severe pain in upper right abdomen plus vomiting, onset one week ago. Patient was taken suddenly with severe pain in upper right abdomen seven days ago. Vomiting began soon after and he chilled for the greater part of the night. Whiskey, hot water bottles and what-not could not keep him warm. He called a doctor, who gave him morphine, but his pain did not lessen for some hours. It has continued in spells until admission.

Examination: Abdomen distended rigid on entire right side, tenderness excessive over right loin, and most marked over gall-bladder region. On account of his desperate condition, temperature 104 degrees, pulse 120, and cold perspiration, no attempt at cystoscopy was made but the surgical service was called in consultation and infected gall-bladder was diagnosed.

As the patient was going to the surgery a catheterized specimen of urine was obtained which showed many casts, much albumin and pus present. No smear was made. This report did not change the diagnosis.

Operation: Gall-bladder incision. Findings: About a gallon of clear urine. Diagnosis: Obstructive hydronephrosis, becoming a pyonephrosis. Result: Nephrectomy three months later. Recovery tedious. Fistula open six months after leaving hospital. Completely well in one year. Comment: He would have stood a few hours study as well as he stood what he got.

The clinical relationship of pyelitis to venereal infection is of absorbing interest, because confusion in diagnosis is attended by accusations and recrimination, severed relationships and litigation. There is so much veneral infection that we tend to become cynical in this regard. While every honest effort to prove the presence of such infection is altogether commendable, there seems to be considerable room for doubt as to what constitutes "proof," and no censure is too severe for the doctor who, for instance in cases with a negative history, gives a positive diagnosis (or for that matter even a hint) of gonorrhea, until he has first proven beyond a question the existence of the disease. Such a mistake, if discovered, will be a calamity to the doctor and, if undiscovered, a calamity to the patient, and to those dearest to him. Such mistakes in married people bring first doubt, then discord, and finally divorce. All undeserved. A definite knowledge of bride's pyelitis will help to avert some of these misfortunes. Dr. Joseph Walker, Tacoma, to whom the writer is indebted for cases 5, 8 and 9, states that, in 500 cases of pyelitis, bride's pyelitis made up 3 per cent.

Case 9. Mrs. B., age 19, occupation teacher. Chief complaint, frequent, painful urination. Onset, one month ago (about two weeks following marriage).

Present illness: About one month ago (which was about two weeks following marriage), patient developed frequent and painful urination. By day every one-half to one hour. By night every one to two hours. The pain was in character burning and located at the bladder outlet. There had been no former attacks, this being her first illness of any sort connected with her bladder. She is not now living with her husband. Her doctor, a Frenchman, had told her she was suffering with gonorrhea and that she must have contracted it from her husband. Her mother was much excited and stated she had consulted an attorney.

Findings: Urethral smear negative for intracellular or extracellular diplococci. Urine: acid, pus 3 plus, colon 3 plus, 1020, albumin plus. No casts.

Cystoscopy, condensed: Bladder mucosa normal except for intensely congested trigone. Both ureters catheterized to pelves of kidneys. Specimens showed pus 2 plus on both sides; a pure culture of colon on both sides. The function on both sides was normal. Culture of a voided specimen for gonococci was negative. Complement fixation at this time and a month later was negative. She cleared up on routine treatment.

Her husband came to the private service for study and was negative to smears both before and after prostatic massage, after injection of strong silver nitrate. Complement fixation was negative on two runnings a month apart. Culture was negative. His urethra was normal as was his prostate and vescicles.

The antithesis of bride's pyelitis is the pyelitis of old women, whose husbands suffer from prostatism associated with priapism. The vaginal mucosa is atrophic and poor in circulation, so a traumatic vaginitis is developed and is followed by a pyelitis. These cases are often fatal.

It would be possible to continue mentioning conditions simulated by pyelitis and to illustrate these conditions by numerous other cases, but already it has been pointed out that pyelitis may simulate closely gastrointestinal crises in children and adults, impending accidents of pregnancy, puerperal sepsis, many acute surgical conditions in the abdomen, cancer of the stomach, abdominal tumors, acute or chronic cholecystitis and gonorrhea in brides, all of which makes obvious the idea in choosing this subject.

There is just one conclusion: that pyelitis may simulate so many things, its symptoms may be so obscure, and its signs so misleading that clinicians, the ones who first see these patients, as well as specialists who finally treat them, must *always* have in mind the possibility of pyelitis.

St. Helens Clinic.

Suction in the Treatment of Laryngeal Diphtheria—In an effort to avoid intubation, Harry R. Litchfield and Reginald P. Hardman, New York (Journal A. M. A., Feb. 24, 1923) in the past permitted patients to remain dyspeic for hours, sometimes to the point of exhaustion, struggling for air, hoping that they might ultimately expel the membrane, or that the antitoxin might check its rapid formation. At present they employ suction promptly, and as frequently as indicated. The patient is wrapped in a mummy bandage as for intubation, and through a Jackson laryngoscope the membrane and mucus are aspirated by means of a 16 to 18 French silk or metal catheter, which is connected to an aspirating bottle, and in turn connected to an ordinary electric suction pump, capable of producing from 5 to 10 inches of vacuum. From May until the last part of December, 1922, 106 patients with laryngeal diphtheria were admitted to the croup service at Willard Parker Hospital. There were twenty-one mild cases which required no treatment. Twelve patients received applicator treatment. Intubation was performed in eighteen cases. Nine patients recived suction and intubation. There were forty-six cases in which suction was used exclusively. The total number of deaths was fourteen, a mortality of 13 + per cent. Of the eighteen patients subjected to intubation, eight died with terminal bronchopneumonia. Three of these were moribund on admission; eight have been discharged cured, and two are still in the hospital, and cannot go out without their tubes for any considerable length of time.

EUGENICS AND HEREDITY*

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The science of eugenics was first invented by Francis Galton, who defined it as "the study of a genesis, under social control that may improve the racial qualities of future generations, either mentally or physically." It might be more simply described as the science of race betterment. Inasmuch as the whole question of eugenics is closely related with the question of heredity, it becomes necessary to consider the two together as essential parts of one subject.

How many of us have ever considered the tremendous importance of this subject from an economic as well as an humanitarian point of view. We read in the papers that there has been a terrible shipwreck with the loss of hundreds of lives or that a great epidemic is devastating our country and the most acute attention is attracted from one end of the country to the other. But how much attention is paid to the great army of mentally unsound who are always in our midst and are daily increasing in number, costing untold millions of dollars either directly or indirectly. It is evident that the most obvious and usual conditions do not attract our notice.

On the first day of January, 1910, there were 187,454 patients confined in public hospitals for the insane in the United States and during that year there were admitted 60,603 patients. This is one and only one of the classes of the unfit. Besides these there are the epileptics, criminals, deaf, dumb, blind and the paupers, which would considerably more than double this number. From our available statistics alone, which are far short of the facts, we can readily compute a sum of expense which is simply appalling, to say nothing of the great suffering and grief which is entailed. When the situation is fully analyzed we must admit that here is one of the most important single questions before the world and must soon invite the attention of our government from the cabinet officer to the municipal official.

In attacking this problem we are confronted with a wall of apathy and ignorance on the part of the public, who find great difficulty in freeing themselves from the old-time prejudice against insanity, which they consider a disgraceful condition, and revealing what they consider to be intimate family secrets. In the average state hospital, even those which are pretending to do modern scientific work, there is a marked inaccuray and lack of system regarding the collection of data on this subject, mainly for the reason that no opportunity is afforded the physicions of consulting both branches of the patient's family. In late years a number of the Eastern institutions have employed field workers, whose duty it is to visit all the relatives possible of each case, and obtain a complete record of every member of the family; condensing this into a chart planned according to the system adopted by the Eugenics Section of the American Breeders' Association and this to become a part of the asylum records. These field workers are specially prepared for this work by means of a summer school in New York, and are usually chosen from among college graduates, and those having some experience in social service work, preferably women. Thru the Eugenics Record Office, of New York, a great amount of interest has been stimulated among the best alienists of this country and thru their work a marked advance has been made in preventive medicine.

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* Read before Thirty-Third Annual Meeting of Washington State Medical Association, Tacoma, Wash., Sept. 6-7, 1922.

In order to fully understand the present theory of heredity, it is first necessary to consider certain fairly well established facts. In the process of fertilization a sperm cell and an egg cell come together. In the nuclear division, during the formation of the karyokinetic figures, the chromosomes split up into double the number contained in the orignal sperm and egg cells and there is a resulting mixture of the chromosomes in the daughter cells. It is very evident that this mixture is one of the functions of conjugation, and it is assumed that the chromatin of the nucleus is the carrier of the hereditary qualities.

Following out the theory of inheritance, it is believed that the chromosomes are the carriers of what have been called determiners, which are the hypothetical transmitters of each separate character of the individual, the so-called unit characters. Now, while the chromosomes split up as indicated, they must be thought of as being filled with these determiners. These determiners are said to be dominant or recessive. If a given determiner comes from one parent only, it is said to be simplex; if from both parents, duplex, and if from neither parent, nulliplex.

Many experiments have been carried out with flowers of the same species but different colors, and also with animals such as guinea pigs which breed and multiply rapidly. The first scientific work of this kind was done in 1866 by a monk named Gregor Mendel, but at that time very little attention was given the matter until 1900, when his work was rediscovered by DeVries and others, and the importance of his findings was fully recognized. By his experiments with plants, Mendel formulated with mathematical precision the ways in which inheritance would manifest itself by determining all the possible combinations in which these determiners could group themselves. This is known as the law of Mendelian proportions.

In its relation to the human species it must be admitted that there are certain difficulties, limitations and objections to this hypothesis, for the life cycle of man can not be worked out or followed as easily as that of plants or animals which multiply rapidly. In order to work out the Mendelian proportions it is necessary that we consider each family as consisting of at least four children in order to predict what any one child will be. Then, again, in the human female we are constantly meeting with miscarriages which are impossible to evaluate and can not be given a place in determining Mendelian proportions. Also there are many diseases which do not develop until late in life, such as paralysis agitans, Huntington's chorea and multiple sclerosis, and children who die from accident or infection previous to the period in which these diseases develop are in the same position as the miscarriages and can not be given a place in determining Mendelian proportions. However, having given these limitations due allowance, we are still in possession of certain facts which are of great practical value.

From the earliest times physicians have recorded observations of the transmission of nervous diseases and insanity by heredity. In modern times the accumulation of large amounts of material in the shape of statistics, published by insane hospitals, has established beyond question the fact that heredity plays an essential part in the etiology of certain neuropathic conditions.

In the report of the New York State Commission in Lunacy for the year ending Sept. 30, 1909, there were shown to be 2,467 cases with known histories, and of this number 1259, or 51 per cent, showed a family trait of insanity. The Michigan asylum for the insane at Kalamazoo, reports 8,531 cases, of which 4,800, or 56.3 per cent, showed heredity of insanity. The Rhode Island Hospital for Insane, for the year ending Dec. 31, 1910, reports 250 cases with known histories and 137, or 54.8 per cent, showing heredity of insanity. These figures are most significant when compared with figures representing the frequency of a neuropathic family among normal subjects; 3 per cent according to Jost, and 7.5 per cent according to Nacke.

Two of our most diligent workers in this field have been Dr. A. J. Rosanoff, of the King's Park State Hospital of New York, and his field worker, Florence I. Orr. In order to determine whether indeed the neuropathic constitution is transmitted in the manner of a Mendelial trait, they made a study of 72 families, representing 206 different matings with a total of 1097 offspring. Their findings and conclusions are most interesting. Of the 1097 offspring, according to theoretical expectations of the Mendelian theory, 359 should be neuropathic. The actual findings showed 351 neuropathic, a variation of only eight. Theoretically, 578 should be normal and their findings showed 586 to be normal, again a variation of only eight. It must be admitted that the correspondence between theoretical expectations and actual findings is remarkably close and these workers are fully justified in their conclusion that "the hereditary transmission of the neuropathic constitution as a recessive trait, in accordance with the Mendelian theory, may be regarded as definitely established."

The rules of theoretical expectation, according to the law of Mendel and followed by Rosanoff and Orr in their investigation are as follows:

1. Both parents being neuropathic all children will be neuropathic.
2. One parent being normal, but with neuropathic taint from one grandparent, and the other parent being neuropathic, half the children will be neuropathic and half will be normal, but capable of transmitting the neuropathic make-up to their progeny.
3. One parent being normal and of pure normal ancestry and the other parent being neuropathic, all the children will be normal but capable of transmitting the neuropathic make-up to their progeny.
4. Both parents being normal but each with the neuropathic taint from one grandparent, one-fourth of the children will be normal and not capable of transmitting the neuropathic make-up to their progeny; one-half will be normal but capable of transmitting the neuropathic make-up, and the remaining one-fourth will be neuropathic.
5. Both parents being normal, one of pure normal ancestry and the other with the neuropathic taint from one grandparent, all the children will be normal, half of them will be capable and half not capable of transmitting the neuropathic make-up to their progeny.
6. Both parents being normal and of pure normal ancestry, all the children will be normal and not capable of transmitting the neuropathic make-up to their progeny.

Among other things these investigators were able to demonstrate certain results to be expected in dissimilar heredity, as, for instance, the mating of an epileptic with an individual trainted with manic depressive insanity; dementia praecox with hysteria, etc. Briefly stated, they determined that some neuropathic disorders are dominant over others and that there are different degrees of recessiveness. In four families they found a union of epilepsy with manic depressive insanity and discovered that manic depressive insanity was dominant over epilepsy, all the offspring being normal or manic depressive but not epileptic. They were also able to demonstrate what they term "neuropathic equivalents," as in the case of epilepsy. The ancestors and collateral relatives would frequently be described as being subject to hemicrania, recurrent sick headaches, fainting spells, spells of automatism, periodic dipsomnia, etc. In pedigrees of dementia praecox were found ancestors described as cranks, nervous, queer, suspicious of friends and relatives. Thus it will be seen that, in building up a pedigree, we must take into consideration not only the more evident neuropathic disorders but their so-called equivalents as well.

Many attempts have been made by scientific workers to investigate the real prevalence of the neuropathic taint in the general population.

Hospital statistics alone cannot be expected to show the real state of affairs, as only one in four of the distinctly neuropathic ever requires confinement in public or private institutions.

An attempt to estimate the proportion of all mental defectives (idiots, and imbeciles as well as insane) was made in the Canton of Berne, Switzerland, in 1902. In the enumeration were included patients who lived in their homes as well as in asylums. The proportion was 1 to 117 in the general population. In the last U. S. census report, published in 1910, it was shown that the total population of the United States had increased 11 per cent, and the number of insane increased during the same period by 25 per cent. Some alarmists have estimated from these figures that in 300 years we will all be insane.

It has been learned that one Swiss woman cost her government $1,250,000 thru her 707 traced descendants. Of these 106 were illegitimate, 142 were beggars, and 64 lived on charity. Among the women, 181 were immoral, 76 were convicts and 7 murderers.

Under the direction of the Eugenics Record Office, and with the financial assistance of Mrs. E. H. Harriman and John D. Rockefeller, a study was undertaken by Dr. Estabrook, of a highly inbred rural community in New York, spoken of as the Nam family altho the name itself is fictitious. The total number of individuals considered who were descended from the original Nam was 852 and included eight generations, dating from 1760. This community lived in a district known as Nam Hollow and were characterized by drunkenness, imbecility and general worthlessness. It has been estimated that in 75 years this family alone has cost the State of New York $1,411,676. Another community of the same character, living in Massachusetts, and known as the Hill Folk, was also investigated and reported by the Eugenics Record Office. Both these families have been traced to one or two feebleminded ancestors and the fearful record of their progeny requires two large volumes for an adequate description of their family trees.

As a contrast to these families and for purposes of comparison should be mentioned the Edwards family, descended from Jonathan Edwards, who was born in 1703. 1394 of his descendants were identified in 1900, of whom 295 were college graduates, 13 presidents of our greatest colleges, 65 professors in colleges, besides many principals of other important educational institutions; 60 physicians many of whom were eminent, 100 clergymen or missionaries; 75 were officers in the army or navy, 60 prominent authors or writers; 100 were lawyers, 30 were judges, 80 held public office, one of whom was vice-president and three United State senators. It is not known that any of them was ever convicted of a crime.

Granting that heredity is the cause of a large percentage of the insane and neuropathic, we now come to the question of what must be done by the world to improve the race and eliminate the feebleminded and unfit from our midst. First, a systematic campaign of education must be carried to the public thru a national organization, composed of those best fitted for this work. The medical profession must inform itself more thoroly on the known principles of heredity and eugenics and give their full cooperation just as they are doing in other branches of preventive medicine.

We have already an excellent organization in the National Committee for Mental Hygiene which was founded in 1909. This committee is composed of about seventy-five of our best physicians, scientists, educators and social workers, and thru their efforts an intensive study is being made by trained workers in this field. It is interesting to note that this organization was brought into existence thru the initiative of a layman, Clifford W. Beers, the author of "A Mind That Found Itself," whose personal sufferings while insane for three years led him, on recovery, to devote himself to the cause of mental hygiene.

Aside from education there are apparently but two remedies; first, the segregation of the abnormal at puberty by holding them in institutions during their procreative period and, second, by rendering them sterile. Segregation, except with a limited number of cases, possibly 25 per cent, is not practical, for the laws will not deprive a mental defective of his liberty unless he is dangerous to be at large. Accepting this as established, we are compelled to resort to the other alternative of sterilization.

This, in my opinion, is the only practical solution of this tremendous problem. Many states have already passed laws intended to destroy the procreative power of the mentally defective but as yet the question has not been given the serious consideration which it warrants. The one main argument which is always raised in a discussion of this subject is the question of unjust interference with an individual's personal liberty. We do not hesitate to quarantine a case of smallpox or leprosy, realizing that this is a necessary measure of precaution for the protection of the public. We will deprive an individual of his personal liberty, if he is a menace to society by reason of his criminal acts. Why, then, should we hesitate to take the necessary measures required for the protection of our race and future posterity by rendering sterile those whom we know to be defective and capable of reproducing their kind. The operations of vasectomy and salpingectomy are simple, sure and safe; do not interfere with normal sexual intercourse and deprive the individuals of nothing more than their power to procreate.

Some eugenists advocate the regulation and prohibition of marriage between defective subjects who would be expected to reproduce defective offspring. If this could be done, some good might result, but we must not overlook the fact that the regulation of marriage would not be effective in limiting the number of defectives to any great extent, for marital rights are not essential to procreation and the moral sense is wanting in the imbecile. That phase of eugenics which relates to marriage, with proper or improper mating, would require a much longer discourse than I could include in this paper. Briefly stated, however, it is necessary that a physician be thoroly familiar with the law of Mendelian proportions, as well as the dominance or recessiveness of certain inheritable conditions, in order to give intelligent advice on this subject.

You will probably recall the nation-wide discussion some years ago regarding the Bollinger baby, of Chicago, who was hopelessly defective and if allowed to live would have been a low grade imbecile or idiot. As you all know, Dr. Haiseldon was severely criticized by a certain class of sentimentalists who were horrified at the idea of allowing this infant to die without making an effort to prolong its existence by means of an operation for imperforate anus. These sentimentalists represent the class who are strenuously opposing the eugenists in their endeavor to improve the race and nothing can be accomplished in the way of bettering the conditions which I have related, until they are made to realize the fallacy of their arguments. I can not believe they have the slightest conception of conditions as they exist. They should visit an institution for feebleminded and see the wretched animals, which must still be called human beings; crying, making incoherent noises, drooling, smearing themselves with their own excreta; and should then be shown the family trees, of which these unfortunates were the offspring. I believe they would then be brought to a realization of the actual state of affairs and would no longer stand in the way of a mental prophylaxis, as advocated by the eugenists.

The time is surely coming when false sentiment and prejudice will be swept aside in the wave of public enlightenment and the subject of eugenics will be given the serious consideration which it deserves.

GRADUATE MEDICAL LECTURES

The seventh session of the Graduate Medical Lectureship will be held at the University of Washington, Seattle, during the week of July 16-20. The program will consist of a daily lecture for five days by each of the following distinguished members of the profession: Dr. J. W. T. Finney, Johns Hopkins University, surgery; Dr. Alfred Stengel, University of Pennsylvania Medical School, internal medicine; Dr. O. S. Ormsby, University of Chicago Medical School, dermatology; Dr. E. C. Rosenow, Mayo Foundation, experimental medicine. The mere announcement of a course containing the names of these eminent medical men is a sufficient guarantee of its value. No previous course has presented a program superior to this. Further details regarding the lectures will be presented in future issues of the journal.

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EDITORIAL

ORGANIZED PUBLICITY

There has been much discussion of late concerning the desirability of providing medical information to the lay press, sponsored by the local medical society, in order to counteract misinformation relative to disease and its treatment, which has been extensively exploited by the numerous cults that have arisen and thrived during recent years. By resolutions of different local socities, articles have been presented to the newspapers, which have agreed to publish anything along those lines prepared by the local physicians. The lay press has shown itself ready and willing to offer its readers correct medical information, whenever the same has been obtainable. The prevailing difficulty in this attempt to inform the public has been its spasmodic character. Started with enthusiasm by a few earnest, voluntary workers, the effort has been continued systematically for a few weeks, when it has been dropped until later revived for another brief period. These isolated endeavors are doomed to short periods of existence.

In order to accomplish anything permanent along these lines, the movement should be under the supervision of an established body like the state medical association. This organization could function for this purpose thru one of its own committees or the public health league. From one of these sources a suitable individual should be secured and paid a sufficient sum to warrant continuous and faithful service in preparing desirable medical material for publication. Such material could be syndicated, so that it could be published simultanously in selected papers in all the cities and towns of the state. If such a widespread effort were begun and maintained over a prolonged period, there would be some prospect of bringing to the attention of the people of a given state such information on medical matters as it is desired to instill into their minds. The modern cults appreciate the advantage of such widespread publicity and they accumulate large sums of money for accomplishing such things as are herein described. If the members of our medical societies sincerely desire to accomplish results of this character in accordance with the announced purpose which is frequently and loudly proclaimed, action along some such lines as this might be expected to accomplish results.

MEDICAL RESULTS FROM OREGON LEGISLATION

The session of the Oregon legislature is ended and all measures considered inimical to public health were defeated. Much credit for this result is due to the ceaseless vigilance of the League for the Conservation of Public Health and its tireless executive secretary.

Perhaps the most far-reaching piece of legislation proposed was House Joint Resolution No. 3. It would have let the bars down for all classes of healers and would have eliminated compulsory vaccination and quarantine laws. The State Industrial Accident Commission would have been greatly handicapped as well as all manufacturers who contract for medical services for their employes. A hearing before the committee on resolutions was held and the advocates of scientific medicine, as well as State Accident Commission and large manufacturing interests, were represented. An attempt was made to amend it by eliminating its application to firms or corporations as well as the State Accident Commission, but the committee reported it out with the recommendation that "it do not pass" and the bill was indefinitely postponed by the House.

Senate Bill No. 24 proposed to tax all hospitals that in any way discriminated against the licensed physician or surgeon. Regardless of the fact that the defects of the bill and the importance of the standardization program were pointed out, a divided report was made. During the discussion a motion to lay the bill on the table prevailed and no further action was taken to bring it up for passage. House Bill No. 76 was in many ways similar with the discriminatory clause eliminated. Its scope was so broad that it not only covered hospitals but other semi-charitable institutions, such as the Y. M. C. A., Y. W. C. A., and institutions where any charge whatever was made by those who were able to pay. A hearing before the committee on assessment and taxation in the Senate resulted in their reporting it out with the recommendation that "it do not pass," even tho the bill had already passed the House by a substantial majority.

House Bill No. 152 aimed to create a board of Naturopathic Examiners and the right to sign death certificates, as well as other reports and certificates with reference to contagious and infectious diseases. This bill would have given to that profession the dignity of state recognition and forced the board to give a license to the members of that cult when the law went into effect. The Senate defeated it by a vote of 20 to 9, regardless of the fact that the committee report was divided and the bill had already passed the House.

Senate Bill No. 166 would have created a Board of Osteopathic Examiners and the present law limiting that profession to minor surgery and permitted them to do instead major surgery. At the present time osteopaths are examined by the State Board of Medical Examiners, a mixed board consisting of regulars, homeopaths, eclectics and osteopaths. The osteopaths admit that only a small percentage of their number are qualified to do major surgery, but regardless of that fact they wanted to give the legal right to all of them to do it. A majority vote in the Senate transferred the fight against the bill to the House. A large delegation of League members appeared before the House committee and pointed out the seriousness of it in such an effective manner that the House committee on Medicine, Pharmacy and Dentistry reported unanimously that the bill "do not pass," which report was accepted by the House and the bill postponed indefinitely.

But little constructive legislation in the interests of public health was passed. The following bills were included in that list: House Bill No. 80 to protect the health of school children by preventing teachers afflicted with consumption teaching in the public schools. Senate Bill No. 9, providing for the sterilization of feeble-minded, insane, epileptics, habitual criminals and moral degenerates, was enacted into law. Provisions were made for educating crippled children in Senate Bill No. 43, which passed both Houses. A law providing for an annual renewal or license fee for chiropractors was provided thru Senate Bill No. 78, which passed both Houses. Senate Bill No. 104 put some additional teeth in narcotic laws by permitting the use of funds used for enforcing liquor laws in the enforcement of narcotic laws.

PROGRESS OF MEDICAL LEGISLATION AT OLYMPIA

Olympia seems to be flooded at this time, during the last ten days of the legislature session, with literature opposing vivisection. Many members of the legislature have been approached and an effort is being made to arouse enough interest so that a bill may be introduced, forbidding the employment of noxious substances upon the living bodies of domestic animals in the pursuit of any research or investigation. This last hour attempt to present and force thru legislation of this particular kind is believed to have been determined on by the antivivisectionists because of certain publicity that has recently been given to the measure introduced in the national congress by Representative Albert Johnson, of Washington. The Johnson bill is now pending before the Committee on Military Affairs of the House of Representatives, and it is serving as a national means of support for this legislation. The bill now in process of preparation at Olympia will give a basis to the antivivisectionists in Washington for organization, and should legislative action be favorable, may invite a referendum fight more intense than the one sponsored by the Public Health League in 1922 in opposition to Senate Bill No. 180.

The last few weeks of the eighteenth session have seen the introduction of many measures affecting the public health. One of the bills of interest is House Bill No. 154, generally known as the Shepherd-Towner bill. This accepts the terms of the Shepherd-Towner act in behalf of the state of Washington, and gives an appropriation of ten thousand dollars for the cooperative work in this state. The administration of this work, involving maternity problems, will be given over to the public health department.

After a three weeks' struggle Senate Bill No. 32, the Dental Practice Act, passed thru both houses and has been signed by the Governor. This measure developed one of the most interesting fights in the legislature to date. The bill was introduced by the Department of Licenses and was very generally endorsed by the ethical dentists. As originally drafted it eliminated the right to use a trade name in the conduct of dental operations. The trade name and advertising dentists succeeded in having the measure amended in the senate so that the trade name section was eliminated. However, it is provided that any firm or corporation using a trade name must list the names of all dentists employed, so that the public may be informed as to the membership of the firm.

The Beeler bill, providing for better narcotic control, passed the senate, following the adoption of more than thirty amendments. These tighten some of the sections of the act, but make no material change in the measure as it came from the house. It has been returned to the house and after examination by the house committee on medicine, surgery, pure goods and drugs, will probably receive the endorsement by the lower branch and then go to the Governor for approval.

Several members of the house and senate are carrying around, in their pockets, certain special bills favorable to the granting of further power to the cult systems. One of these which, it is reported, has been very carefully drawn, gives to the drugless physicians the right to prescribe drugs. Another allows the chiropractors the right to handle and report on industrial accident cases. The osteopaths seek wider legal authority in surgery, under one of the proposals discussed around the legislature, while the christian scientists have a pocketful of various proposals that may see the light of day before the gavel falls on the last hour of the session. However, the committee work is now well congested and, with the mass of bills before them being considered, it is not believed that the attack of those endeavoring to weaken the health standards of Washington will receive much attention at the hands of the legislature.

MEDICAL LEGISLATION IN IDAHO

The Idaho legislators appear to have exhibited a most commendable discrimination in the consideration of various bills introduced in the present session dealing with medical matters and the numerous cults. A bill prohibiting practice by the non-licensed quacks was passed by a vote of 32 to 9 in the Senate and 58 to 4 in the House. This bill has been considered by a number of the best attorneys in the state and they state it is "airtight." Another bill has passed the House, without a dissenting vote, giving the physician and surgeon the right to fit glasses. This particular question has been confronting the profession for the last four years. No trouble is anticipated in putting it thru the Senate. At the time of this writing the naturopaths and drugless healers have introduced licensing bills, but the Public Health Committee refused to allow them to be printed. They have now been placed in the graveyard and will cause no more disturbance this session.

The osteopaths were not able to get a single legislator to introduce their bill, allowing them to prescribe medicine as taught in osteopathic schools and do surgery in all its branches. There will be no further introduction of bills at this session, as both houses of the legislature have placed a ban upon them except by committees, and none of the enemy are able to reach these committees in either side of the house. Under the present circumstances satisfaction is felt that no bills detrimental to public health were passed. As a matter of fact only two were introduced and they were quietly put to sleep.

CHIROPRACTIC IN BRITISH COLUMBIA

The regulation of the healing art is managed somewhat differently in the Canadian provinces from that in the States. This fact is illustrated by the recent action of the Provincial Parliament of British Columbia in its legislation regarding the practice of chiropractic. An amendment to the Medical Act of the Province was passed, providing for the appointment of an examining board to consist of three members of the College of Physicians and Surgeons of British Columbia and two duly qualified chiropractors. This act was not made retroactive, as is the almost universal practice in our states, whenever a measure establishing an examining board is passed for the benefit of a newly born cult, by virtue of which those who have already been in practice for a certain period are licensed without the formality of an examination. Our cousins across the border have provided that no chiropractor will be permitted to practice hereafter except after obtaining a license from this board.

The act states that the examination shall be held in anatomy, physiology, chemistry, pathology, neurology, histology, physical diagnosis, gynecology, hygiene, and principles and practice of chiropractic. It would appear that one passing such an examination would of necessity be suitably qualified to recognize and treat the ordinary run of disease. Furthermore, it is provided that such chiropractor shall be restricted wholly to the practice of chiropractic.

A curious situation has arisen regarding this examination. Since there are not as yet any qualified chiropractors in the Province, the examining board presented a request to the Chiropractic Association of Washington for the loan of two of its members from Seattle to serve on this examining board. The members in this city who were approached for this purpose promptly declined the honor of this service. The question now arises, how shall these chiropractic applicants for licensure be accommodated, if none of their particular form of practice can be secured to serve as examiners. The outcome of this situation will be observed with interest.

THE SEATTLE JUNE MEETING

The committee in charge of the meeting of the Pacific Northwest Medical Association in Seattle for the coming June, is perfecting the plans to make this one of the greatest and most profitable meetings ever held in the Pacific Northwest. In addition to the speakers, whose names and titles of papers were mentioned in our last issue, the following well known medical men have consented to be present and deliver papers. Dr. Albert T. Byfield, pediatrician, of the University of Iowa, Iowa City. Dr. J. B. Collips, of Toronto, coworker with Banting and Best, will read a paper on insulin. Dr. H. Gideon Wells, professor of pathology, Chicago University, will deliver a lecture on "Rumania and Its People, Their Part In the World War and the Work of the American Red Cross With Them." This will be illustrated by colored lantern slides. Dr. Francis W. Peabody, of Harvard Medical School, will deliver a public lecture on "The Public and the General Practitioner."

The headquarters will be on the fifth floor of the Stuart Building Annex and adjacent to it will be the commercial exhibit of drugs and medical preparations, instruments and appliances nd medical books. It is expected that this will be one of the most complete exhibits of this character which has been presented in this part of the country. There will be no official entertainments. On the evening of the last day, however, there will be a banquet, for which a fee will be charged in addition to the ten dollar registration fee which covers all other features of the meeting.

ATTRACTIONS OF SAN FRANCISCO A.M.A. MEETING

The Committee of Arrangements for the A. M. A. meeting at San Francisco in June has issued a circular letter descriptive of the numerous excursions to various parts of the Pacific Coast, which are scheduled to follow this meeting. Descriptions are given of the excursions to Hawaii, Alaska, Rainier, Glacier, and Crater Lake National Parks, and the Eastern trip by way of the Canadian Rockies. Mention is also made of local scenic attractions in Oregon and Washington, in addition to those in California.

It might be well that these attractions be considered by the profession of the Pacific Northwest, as every one ought to make himself personally familiar with the wonders of nature on the Pacific Coast. The San Francisco meeting can be conveniently scheduled by physicians reached by this journal who plan to attend the meeting of the Pacific Northwest Medical Association in Seattle, preceding the San Francisco meeting. A special train or steamship will be provided to take the visitors in a body to the meeting of the A. M. A.

UNTIMELY CRITICISM

The February issue of *The Medico,* of Portland, contained an editorial charging NORTHWEST MEDICINE with publishing bad advertising in "The Fort Wayne Medical Defense Company," on the ground that this concern is not licensed to do business in the states of Washington and Oregon, and therefore it is a subterfuge to solicit the same by mail thru this advertising. The fact is that this company is not advertised in this journal. We do carry an advertisement of The Medical Protective Company of Fort Wayne on page 23. This company is licensed by the insurance department of this state and is, therefore, authorized to transact its business in Washington. This incident is an illustration of the fact that an editor of a magazine should not go out of his way to attack another publication, unless he positively knows what he is talking about. Otherwise he may expose himself to an exhibition of ignorance.

MEDICAL NOTES

OREGON

New Hospital Started. The new Shrine hospital for crippled children, to be erected in Portland, was begun last month. Its construction will be rushed to rapid completion. It will cost with furnishings $260,000. This is one of ten hospitals which have been ordered by the national board of the organization. It is expected to be one of the greatest institutions of the kind in the country.

Hospital Plans Fail. The National Hospitalization Board in Washington has voted against the purchase of the Hahnemann Hospital in Portland, after it was considered definitely settled that the government would acquire this institution. It is stated that, if this decision is final, the hospital will be managed under local directors as an active institution.

New Hospital Opened. A new hospital was opened at North Bend, Feb. 5. It was built by Drs. Russell and Phil Keizer. It is a two-story building and has accomodations for twenty patients. It has two surgeries with complete up-to-date equipment.

Hospital Burned. The Ashland Sanatorium, of Ashland, was gutted by fire, Feb. 11, sustaining a damage of $10,000. The building was formerly a large, private residence and had been remodeled for a hospital.

Central Willamette Medical Society held its annual banquet and business session at Eugene, Feb. 1. Twenty-eight members were present from Lane, Linn, Lincoln and Benton county societies. The speakers were Drs. J. H. Pettit and Charles Sears, of Portland.

Doctor Decorated. Dr. Esther P. Lovejoy, formerly of Portland, was last month presented with the croix de guerre, by the Greek government at Athens, for her work with the Near East Relief in Smyrna. Since 1918 the doctor has spent much time in the American Women's Hospital, treating Greeks, Turks and Armenians.

Resigns from Office. Dr. J. O. Matthis, of Salem, has resigned from the position of school physician which he has held for some time. The city has recently come thru an epidemic of smallpox and diphtheria, both of which have now subsided.

Doctro's Home Burned. The residence of Dr. W. H. Dale, of Eugene, was burned to the ground, Feb. 6. As the residence was outside the city limits, no water was available for extinguishing the fire.

Dr. W. G. Cowan has located for practice at Athena. For the past two years he has practiced at Walla Walla, Wash.

Dr. E. R. Huckleberry, recently connected with the State Board of Health at Portland, has located for practice at Garibaldi.

Dr. Ira B. Bartle has located for practice at North Bend. He practiced in this city previous to the war. After serving during the period of the war, he practiced for a time in Arizona.

Dr. George Winchell has located for practice at Eugene, coming from Calgary. Formerly he practiced in Michigan.

Dr. I. Dietsche, who left Manheim, Germany, a year ago, has located for practice at Klamath Falls. For several months he has practiced in Bend.

WASHINGTON

Appropriation for Hospital. It is stated that the government has appropriated $180,000 for new construction and maintainance for the Fort Walla Walla Veterans Hospital, No. 85. Two new ward buildings of fifty beds each will be constructed at a cost of $120,000. About $30,000 will be expended on repairs. At present the hospital will accommodate one hundred fifty patients, which will be increased by one hundred when the new construction work is completed.

New Hospital Under Contract. The contract has been let for the neuropsychiatric hospital for the U. S. Veterans Bureau at American Lake, which will cost $1,397,000. It will contain something more than two hundred and sixty beds. It will involve the construction of twenty buildings. It will be built of reinforced concrete and will include all necessary buildings for doctors, nurses, recreation and general assembly buildings, etc. According to the contract it must be completed in 260 days.

Hospital to be Surveyed. The Orthopedic Hospital, of Seattle, i to be enlarged by the construction of a nurses' home to cost something more than $50,000. Previous to this construction an expert has been engaged to make a complete survey of the institution for the purpose of utilizing the available space most effectively for the different departments of the institution.

Lewis County Medical Society held its annual meeting at Centralia, Feb. 16. The following officers were elected for the ensuing year: President, Dr. Harry Feagles, Chehalis; Vice-President, Dr. H. Y. Bell, Centralia; Secretary-Treasurer, Dr. Rush Banks, Centralia.

Dr. A. B. Cook, recently of Anacortes, has located for practice in San Pedro, Calif.

Dr. J. R. Turner, of Tacoma, has been appointed Marine Surgeon in place of Dr. F. J. Schug, deceased.

Dr. H. M. Read, of Seattle, has been promoted to Lt. Col., Medical Reserve Corps, U. S. A. He served nineteen months in the army during the recent war.

IDAHO

Pocatello Medical Society held a meeting at Pocatello, Fed. 9, when the following officers were elected for the ensuing year: Dr. C. W. Pond, Pres.; Dr. C. W. Clark, Vice-Pres.; Dr. W. F. Howard, Sec'y-Treas. Dr. W. A. Wright read a paper on Pelvic Reconstruction. Dr. W. F. Mullen gave a report on Periosteal Sarcoma of the Femur. Dr. H. C. Irwin presented a specimen of sarcoma of the liver.

Only Physician in the Legislature. Dr. Walter F. Pike, of Twin Falls, has been the only physician in the Idaho legislature, being a Democratic member of the Senate. He is the second Democrat elected to the Senate from his county during statehood. He has been active in promoting legislation concerning the health interests of the state.

Appointed Health Officer. Dr. F. G. Wendell, of Sandpoint, has been appointed county physician and health officer. The doctor has been the previous incumbent and was appointed after a call for competitive bids for these two offices.

OBITUARIES

Dr. F. J. Schug, of Tacoma, Wash., died January 17, after a short illness. He was born in Tuscarawas, Ohio, in 1854. He attended preliminary school at Upper Sandusky and normal school at Ada, Ohio. After spending several years as a machinist he studied medicine at the University of Kentucky, graduating at Columbus, Ohio. He practiced in Upper Sanducky for a time, moving to Columbus, Nebr., in 1878. He located at Tacoma thirty years ago. In 1894 he was appointed city health officer, serving in this capacity for twelve years. In 1897 he was appointed surgeon in the U. S. Public Health Service, in which capacity he continued until the time of his death.

Dr. Chas. M. Ramsdell, of Cove, Ore., died at La Grande, Feb. 8, after a long period of illness. He was born in Rutland, Vt., in 1864. He received the degree of B. A. and M. A. from the Iowa State University. He obtained his medical education in Kentucky Medical College. He practiced for a time at Louisville, Ky., moving then to Texas and later to New Mexico. He moved to Cove in 1898, practicing there since that time.

REPORTS OF SOCIETY MEETINGS

KING COUNTY MEDICAL SOCIETY

The January meeting of the society was held in the Public Safety Building in Seattle, Wash., Feb. 5, President C. E. Hagyard in the chair. Dr. H. M. Read, Commissioner of Health, gave a talk on culture tubes and incubators in the different drug stores in the city.

Mr. Irwin L. Weber, E. E., M. E., read a paper entitled "A Technical Study of the Climate of Seattle and the Puget Sound Region in Relation to the Mental Efficiency, Comfort and Health of Mankind." The weather, more than any other factor affects human health, activity and progress. The ideal climate for the highest civilization is approximated in but few places in the world. Among these is the Pacific Slope, embracing the states of Washington and Oregon and the southwest half of British Columbia, with Puget Sound in the center of this area. This region is blessed with frequent rains and high relative humidity during the entire year. According to the anthropologists, the highest civilization and evolution occur in places which are blessed by overcast skies. It is sunlight and not sunshine which is desirable for humanity. The Pacific Northwest region is most admirably adapted for the health and comfort, the welfare and the propagation of the deep-thinking, hard-working and industrious types of humanity.

A luncheon was served after the meeting.

The Medical Section of the society held a meeting Feb. 12, with Dr. A. R. Robertson in the chair. Dr. W. S. Griswold read a paper on "Tuberculin Therapy." Tuberculin, if properly administered, is particularly valuable in urinary, peritoneal, glandular, skin tuberculosis and tuberculous sinuses. Since the use of tuberculin is more exacting and difficult than that of most therapy, the importance of careful study of the patient and fitting the dosage to the individual needs, was especially stressed.

Dr. H. C. Carothers read a paper on "Clinical Notes on the Management of Diabetics." The paper was based on a study of one hundred and twenty-five patients. The importance of a balanced diet was discussed and the methods of keeping the patient sugar and ketose-free. The education of the patient in the management of his own diet is necessary.

PIERCE COUNTY MEDICAL SOCIETY

The annual meeting of the society was held in Tacoma, Wash., Feb. 6. The newly elected president, Dr. J. P. Kane, mentioned some of the things he hoped would be accomplished during the current year. Addresses were made by Rev. Herbert B. Rhoades and Rev. Father Joseph Sullivan. Modern therapy was discussed by Dr. Mary F. Perkins. Mr. Robert O. Jones, of the Public Health League, spoke on "Soldiering at Olympia." Dr. Christian Quveli discussed the "Organ Grinder's Lament."

CORRESPONDENCE

THAT UNJUST VERDICT

To the Editor:

Your editorial, "An Unjust Verdict," appearing in last month's issue, is a much deeper and more important discussion than one might adduce from a casual reading. What Dr. Hoffman found incumbent to do after examining the injured knee, and what the ultimate result of said injury came to be is not the point. If he used "reasonable skill" he fulfilled every requirement of the law. This I am sure Dr. Hoffman would do. Indeed, I know him well enough to know that he would use more than the legally required "reasonable skill."

Even tho the cutting of a "leader" was necessary to washing out and draining the joint sac, and even tho such cutting resulted in the toe drop and anesthesia complained of, it is still abundantly evident that good surgery was at no time neglected, for it is well known that infection of the knee joint has a mortality that does not obtain with any other joint and that drainage, even at the cost of the joint's function having to be sacrificed, is the surgeon's first duty. Unless life of the patient be the first conservatism, then it is not good surgery.

But I am straying from my earlier thought. Where was the profession that was able to forestall the handing down of so unjust a verdict? If the apparent egotism may be permitted, I will refer to the time when I was prosector of anatomy at the medical school of the University of Illinois, also my time demonstrating anatomy at the North

Pacific College, Portland. From this experience I am wondering why a leg, properly dissected, nothing cut away, merely component parts separated, was not shown to that jury.

I am also regretting why the work of John B. Murphy was not referred to. That wonderful work of which, in a personal lecture, he told the Oregon and Washington profession just a few years prior to his untimely taking off. Let me quote him in brief. "So long as the endothelial 'shingling' of the synovial membrane has not been disturbed, no infection can reach the joint. It is only when these endothelial cells have been traumatized that we need to have fear. It is not necessary that the synovial sac be opened to become infected. Often the slightest bump, in which the synovial membrane is pinched between the bones of the joint will be followed by the most desperate infections, secondary to some infection too mild for recognition prior to receiving the bump." How well adapted are the fangs of a dog for injuring the synoviae of the knee.

J. Christopher O'Day, M.D.

DEPARTMENT OF HOSPITAL STANDARDIZATION

PERSONAL HISTORY SLIP

A great deal of criticism has been directed toward this slip in the standardized case records. Analysis of the slip, however, shows the following: First, A final diagnosis to be recorded when determined. This, naturally, is for the completion of the record and as this slip comes first on the record is the last to be filled out. Then follow age, sex, race, family history. Immediately following this comes the chief complaint.

Under chief complaint should never be written the physical examination. This is probably one of the most common mistakes made on this record, or the physician will list under this heading everything that is wrong with the patient, whereas should be given what the patient seeks treatment for, as pain in the abdomen associated with vomiting and chills, as in a case of appendicitis; pain in the chest coming on suddenly and followed by a chill as in a case of pneumonia; loss of function of a leg following an injury. The chief complaint is the thing that brings the patient to the doctor or calls the doctor to the patient.

Then the date and mode of onset means the day the patient first began to complain and what he began to complain of at that time.

Probable cause. What might be attributed the cause of the complaint, as exposure to cold in the case of pneumonia, chronic infection of the gallbladder, chronic infection of the appendix, automobile injury. Course means from the time of the onset of the condition, what happened to the patient in the way each symptom progressed, progression of symptoms followed by admission to the hospital. This can all be noted in a few short sentences. For instance, patient seeks relief from pain in the right chest; four days previously (date) patient had a pain in the right chest, after which had a severe chill; had been out in a boat and exposed to cold, thought it was a slight attack of pleurisy, remained in bed for two days then I was called to see the patient; did not insist upon his coming to hospital, thinking it would get better; applied mustard plaster, strapped the chest, gave a cathartic, but the patient gradually became worse and was admitted to the hospital. In this there is nothing of the past history of the patient outside of this particular illness nor any of the physical findings. In the next column is a space for the past history, diseases of childhood to date, habits and social data. If a man has been injured in an automobile accident it is not necessary to mark down in this column everything that has happened from the moment he was born until the present moment, except that it might be important to know whether he was accustomed to the use of alcohol, any previous injuries, and what his position in life under social data. On the other hand, a person with cancer should have the past history fairly complete. In an old arteriosclerosis the social data and diseases prior to admission to hospital are of importance. This column must be filled out differently for different diseases and different types of individuals.

It is well for the interne, however, to fill this out completely in every case, because he will gain a better insight into the particular patient whom he has never seen before, than would the family doctor who has known this person for many years and treated him for all his illnesses. At the bottom of this slip is a place for former admissions to the hospital. This has reference to the past history and is a check on what appears above.

THE PHYSICAL EXAMINATION SLIP

This slip was adopted by the American College of Surgeons as being sufficiently complete, if properly filled out, to answer all practical purposes. Many hospitals have adopted a more elaborate slip for the physical examination, some having all the various diseases printed, after which one may check the condition found to be present. Others have a blank paper. That adopted by most hospitals in conformity with the College of Surgeons gives, first, a working diagnosis after physical examination. This can be rather general or specific in character.

Under "general condition" temperature, height, weight, pulse, respiration and nutrition are noted and then comes the physical examination with the headings: head, neck, chest, etc. It is well in filling out this slip to conform to the general standard. That is, a heading should be made, as head, under which the examination of the eyes, pupillary reflexes, condition of the nose, mouth, tonsils and teeth are noted. Then the next heading, neck, would take in the condition of the cervical glands, the thyroid, and any other conditions worthy of note, Under chest, it is not sufficient to say, chest normal, for it is often important to know whether the apex beat is in its proper place, the condition of the sounds both of the heart and lungs,· expansion of the diaphragm and the condition of the chest wall.

For internes it is well to establish a routine complete examination. In each case the sounds should be described as well as the measurements. For the busy practitioner it is permissible, of course, to make the notation that the chest is normal, provided the case is one of abdominal trouble, or trouble such as a broken bone, whereas the opposite is true in a chest case, for instance, pneumonia: then it is not necessary to go into detail regarding the neurologic examination. Examination by the internes should always be complete, and each of the systems taken as noted on the slip and filled out in detail. The interne signs at the bottom: examined by.., and the reviewing physician initials after he has reviewed the case.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Physiology and Biochemistry in Modern Medicine. By J. J. R. Macleod, M. B., Professor of Physiology in the University of Toronto, etc. Assisted by Roy G. Pearce, A. C. Redfield, N. B. Taylor, and by others. Fourth edition, with 243 illustrations, including 9 plates in colors. 992 pp. $11. C. V. Mosby Co., St. Louis. 1922.

This book is just what its title indicates and is an admirable text on the subject. As the author points out, the student gets the physiology before he has any clinical work and too often does not see much practical application of the subject durhis medical course. The physician who has been in practice for some time rarely consults his physiology, even tho he may realize that he could do better work if he did so. This is partly due to there having been no work designed until recently to make the connection between physiology and practical medicine clear. The laboratory worker and the clinician too seldom understand each other. This book gives the clinician a clear idea of what help he may expect from blood and urine chemistry and the various means of estimating metabolism. There are chapters on blood pressure and the action of the heart, on respiration and the secretion of the urine that are very helpful. The chapters on metabolism of proteins, fats and carbohydrates are practical. The book deserves a place in the library of every progressive practitioner. GRISWOLD.

Electrotherapeutics for Practitioners. By F. Howard Humphries, M. D., (Brux.), F. R. C. P. (Edit.), etc. Late officer in charge x-ray and Electrotherapeutic Departments Third London General Hospital. Illustrated second edition, revised and enlarged. 300 pp. $7.50. Oxford University Press. American Branch, New York.

This is a helpful book for the practitioner interested in the various branches of electrotherapeutics. The intended scope of the book is to discriminate and explain the class of ailments which are preeminently suitable for treatment by this valuable therapeutic agent, to note those diseases in which it may be found useful, and to give an idea of the apparatus which is use and how that apparatus is made. Electrotherapeutics is not a panacea for all ills but is a valuable adjunct to the general practice of medicine.

Static electricity, light as a therapeutic agent, diathermy, galvanism, faradism and the sinusoidal currents are fully described. Electricity, when properly used by qualified physicians in suitable cases, plays an important role in modern therapeutics. The chapter on radiotherapeutics deals chiefly with superficial therapy. The diseases requiring high penetration are briefly discussed, but it has not kept pace with recent developments. Modern x-ray therapy is a large subject and is in reality not a branch of electrotherapeutics, and consequently cannot be adequately treated in such a general book. In closing the author warns that the public, in a careless manner will flock to an "electric establishment" and allow unqualified people to administer powerful agents which they know are capable of at least causing serious injury, when they would certainly not allow any but the most carefully selected physician or surgeon to attend them for ailments however trivial. But the lesson to be drawn from this, he fears, is not for this day or generation. DWYER.

Handbook of Electrotherapy, for practitioners and students. By Burton Baker Grover, M. D., President of the Western Electrotherapeutic Association, etc. Illustrated with 103 engravings and 6 plates of 12 charts. 420 pp. $4.00. F. A. Davis Co., Philadelphia.

The fundamental principles of electricity and the methods of obtaining the various modalities are discussed in a concise manner. About half of the book is devoted to diseases amenable to electrotherapeutics. Instructions for the application of the means selected as well as the results are frequently ambiguous. Methods are often empirical and expressions, such as certain treatments often relieve, favorably influence, improve, benefit, cause resolution, or gain in weight, are very frequently used. One wonders why this, when many of these diseases are readily and quickly cured by well established methods. SNIVELY.

X-Ray Dosage, Treatment and Radiography. By William D. Witherbee, M. D., Radiotherapist Presbyterian Hospital, N. Y., etc., and John Remer, M. D., Radiotherapist, New York Hospital, N. Y. 87 pp. $1.75. The Macmillan Co., New York. 1922.

This little book is a very complete manual of instruction on dosage, based upon the extensive experience of the two authors. Altho, from a casual perusal of the book, it seems to be somewhat complicated on account of its many formulae, a rereading soon brings out the fact that the rules for dosage are in reality quite simple and easily understood. The book covers practically all of the

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problems that would be met by the average worker, including unfiltered dosage, filtered dosage and x-ray burns, and then goes into the technic of the treatment of special conditions, such as skin diseases, tonsils, etc. It is not intended to cover the technic of deep therapy as now used for the treatment of cancer. The reviewer, from personal acquaintance with and observation of the work of one of the writers in his own laboratory, has no hesitation in recommending this very useful manual, especially to those who are not specializing in the work but who find it necessary at times to use the x-ray therapy. It can, however, be read to advantage by all who are interested in x-ray work. BOURNS.

Practical Psychology and Psychiatry. By C. B. Burr, M. D., Medical Director of Oak Grove Hospital (Flint, Mich.), for Mental and Nervous Diseases, etc. Fifth edition, revised and enlarged with illustrations. 269 pp. $2.00. F. A. Davis Company, Philadelphia.

The first part of this volume on psychology deals with the mind and its development, the localization of function in the brain and consideration of the processes of sensation, perception, reasoning, etc. The rest of the book considers insanity in its various aspects and the methods of treating it. Insanity is defined as a "prolonged departure from the individual's normal standard of thinking, feeling and acting." There is a final suggestive chapter on the prevention of insanity, based on a wise method of teaching directing the young. Lack of discipline and self-control in adolescence is a predisposing factor to subsequent mental instability.

SMITH.

Principles and Practice of X-Ray Technic for Diagnosis. By John A. Metzger, M. D., Roentgenologist to the School for Graduates of Medicine, Medical Department University of California, Southern Division, Los Angeles. With 61 illustrations. 144 pp. $2.75. C. V. Mosby Co., St. Louis, 1922.

This little book fulfills its purpose admirably. The subject matter is nicely arranged, condensed and concise. Instructions are definite and the advice to use a one millimeter aluminum filter in all work is important, as many men neglect it, and writers have been delinquent in not calling attention to it. It is the author's purpose to outline a ready and practical technic and the question of diagnosis is not touched upon.

SNIVELY.

Premature and Congenitally Diseased Infants. By Julius H. Hess, M. D., Professor and Head of the Division of Pediatrics, University of Illinois, College of Medicine, etc. Illustrated wth 189 engravings. 397 pp. $5.50. Lea & Febiger, Philadelphia and New York. 1922.

The author not only goes deeply into the subject, etiology, physiology and pathology in detail, but takes up under pathologic changes due to prematurity, a broad classification of the subject with abundance of detail. The illustrations, with an excellent group of roentgenograms and diagrams, give details of the fetus from the seventh to the thirty-sixth week. Nursing and feeding, care, with excellent advice regarding wet nurses, with charts and illustrations for nursing and illustrating the amounts of milk to be given are well worth the careful study of both the pediatrist and general practitioner.

Treatment of hernias is well worth reading, a condition very commonly found in the premature infant. "Pyelocystitis is as possible in the newborn as in older nurslings," a fact that many forget even in the full term infant and children. "Diseases Peculiar to Infants" is interesting and well worth remembering, as rickets, tetany, and anemia are all associated and fairly common early in the life of the premature. This is an excellent compilation of information on the premature infant.

MOON.

Miracles and the New Psychology. By E. R. Micklem, M. A., B. Litt. (Oxond). 141 pp. $2.50. Oxford University Press, American Branch, New York, 1922.

The question whether the miracles of the Bible are to be accepted as recorded has always disturbed the minds of many Christian believers. The author of this volume, a clergyman, has made a profound study of the subject, assisted by the advice of numerous medical friends. His discussion of miracles is lucid and reasonable. Belief in the miraculous was commonly held in those days. This fact and the natural tendency to exaggeration of phenomena of healing must be kept in mind. Many recorded miracles can be readily explained as natural recovery from recognized diseases. Undoubtedly hysteria and allied conditions figure in others. The therapeutics of Jesus and his apostles included much of psychotherapy and suggestive treatment. Leprosy, fever, paralysis, demon possession, blindness and other conditions are discussed in detail. This is profitable reading for one interested in this subject.

SMITH.

The Successful Physician. By Verlin C. Thomas, M. D. Visiting physician to Franklin Hospital, San Francisco. Octavo of 303 pages. Philadelphia and London: W. B. Saunders Company, 1923. Cloth, $4.00.

Of the different books published for directing the young physician how to conduct himself for a successful life of medical practice, this is one of the best. It contains useful suggestions, the observation of which will materially profit any reader It is well stated that no matter how thoro one's knowledge of medicine, if he cannot instill confidence, faith and gratitude in his patients, he cannot possibly climb to the top of the ladder. The author truly states that a physician is a public personage. He should have an interest in the general character of the community. There are chapters with suggestions as to how one should become favorably known in towns of various sizes, discussion of office systems of accounts, as well as the doctor and his investments. It is wisely stated that a doctor should have some sort of a hobby in connection with the practice of his profession. It is needed for relaxation and the promotion of health. This book contains profitable reading.

SMITH.

Lateral Curvature of the Spine and Round Shoulders. By Robert W. Lovett, M. D., Sc.D. Boston. John B. and Buckminster Brown, Prof. of Orthopedic Surgery, Harvard University. Fourth Edition. Revised with 172 illustrations. 217 pp. $2.50. P. Blakiston's Son and Company, Philadelphia. 1922.

The revision of this book has been for the purpose of eliminating the methods of treatment which have fallen into disuse. Much new material has been added, altho the author states no radical advances in the treatment of scoliosis have been made in the last few years. The history of scoliosis is reviewed from the time of Hippocrates, twenty-four hundred years ago, who first used this word. Chapters are devoted to symptoms, pathology, etiology and diagnosis of this condition. Treatment discusses the methods of exercise, jackets, braces, etc. The illustrations are abundant, giving a graphic description of all methods recommended.

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ORIGINAL CONTRIBUTIONS

RECENT PROGRESS IN THE TREATMENT OF CHRONIC EMPYEMA*

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The more recent trend in the treatment of chronic empyema has been toward conservatism. The enormous increase in the incidence of acute empyema during the influenza pandemic afforded unparallelled opportunities for testing the methods of treatment previously accepted. The disappointing result is a matter of history. It was learned, but at a grevious cost in human lives, that the treatment of empyema is not to be summed up in the simple formula, "rib resection and drainage." Aspiration and closed drainage irrigations periodically introduced and as often discarded found their indications based not on empiricism, but on a sound conception of the disturbed physiology as well as the pathologic anatomy involved.

Observations of acute cases in the process of transition to the chronic type, and the study of large numbers of chronic cases led to a more adequate comprehension of the causes of chronicity. Dealing with the conditions which predispose to or maintain chronicity, and the adaptation of the antiseptic solution irrigation to its treatment, constitute the essentials of real progress in the treatment of chronic empyema.

The causes of chronicity most generally observed are faulty drainage, dense adhesions, the result of delayed diagnosis, tuberculous infection, bronchial fistula, foreign bodies, and certain constitutional conditions apparently associated with the inability of the organism to cope with the infection. Rarer conditions, such as actinomycosis, pulmonary fibrosis occurring during the collapsed state of the lung, and empyema following complete collapse as in traumatic pneumothorax, are occasionally observed as causes of chronicity.

Faulty drainage in acute empyema seems by far the most common cause of chronic empyema. The opening may be too high or too far forward, so that dependent drainage is not secured, but more often the drainage opening is allowed to narrow down in the presence of a suppurating cavity of considerable size. Uninterrupted, adequate drainage must be maintained in order to secure obliteration of a suppurating cavity. Secondary pockets communicating with the main cavity by a narrow sinus occur in streptococcal empyema, and, unless recognized and drained, they almost inevitably lead to chronicity. If suspected, such cavities may be located by roentgen ray, following injection of bismuth in suspension.

Secondarily infected tuberculous empyema is fairly common and is the most persistently chronic of all types. Many surgeons of experience consider it practically incurable. Its recognition is of the greatest importance from the standpoint of both prognosis and treatment. As pointed out in a previous article, a history of preceding pleurisy, and the presence of tuberculosis elsewhere, particularly in the lungs, are of much significance. The presence of tuberculosis bacilli in the discharge ma be demonstrated, but failure to demonstrate them by no means excludes tuberculosis. Often the diagnosis is first made at operation from microscopic examination of the excised pleura. Many cases run a protracted course. In one such case observed at the Mayo Clinic the empyema had been present for twenty-three years. The fact should be better known that it is the mixed tuberculous and pyogenic infection that makes these cases of such serious import. In the case of any patient, suspected of being tuberculous, a pleural effusion should be cultured before drainage. A sterile exudate should be considered tuberculous until proved otherwise. If tuberculous, open drainage should not be instituted, as that is certain to lead to secondary infection.

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Empyema associated with bronchial fistula is prone to become chronic. In such cases the lung expands slowly, probably chiefly because the effect of coughing, straining, and so forth, and in the presence of a fistula does not produce local increased intrapulmonary pressure. There is also usually associated purulent bronchitis, or bronchiectasis with discharge of a part of the resulting secrtion into the empyema cavity. When there is no external drainage, patients with bronchial fistula may raise large amounts of purulent sputum and the condition may be mistaken for pulmonary abscess or bronchiectasis. Aspiration of the pus from the pleural cavity usually suffices to establish the diagnosis. Occasionally filling the cavity with salt solution, or injecting a little methylene blue solution is necessary to demonstrate the presence of a small bronchial fistula. The patient will taste the salt solution or expectorate blue-stained sputum, as the case may be. Irritating antiseptics such as the hypochlorite solution should not be used until after the possibility of a bronchial fistula has been excluded.

Of the foreign bodies which may be the cause of a persistent fistula or cavity, lost drainage material is perhaps the most common. The possibility of the presence of sequestered fragments of denuded rib stumps, infected at operation, are probably less often recognized. I have had a number of such cases of several years' duration.

In some cases chronicity seems to be owing to a lack of healing power of the tissues. The chest wall may be collapsed so that the surfaces are in contact and maintain good drainage, and yet healing does not result. This is characteristic of tuberculous infections, but occurs also in other constitutional diseases, such as syphilis, anemia, nephritis, and amyloidosis, if patients are greatly debilitated. Amyloidosis is associated, not infrequently, with chronic suppuration of many years' duration. In other instances, in which there is obliteration of the cavity, recurrence is probably dependent on the presence of latent infection buried in the thickened pleura. Under such conditions constitutional treatment to improve the general health is obviously a prerequisite to successful treatment of the localized process.

Pneumonitis, resulting in fibrosis of the lung, altho difficult to recognize, probably is responsible for the failure of the lung to expand in certain cases. Fixation of the lung in a completely collapsed condition is observed in some cases of traumatic pneumothorax followed by empyema, and also in cases of acute empyema drained in the seropurulent stage. Such cases may later require extensive collapse of the chest wall to obliterate the cavity.

Two or more etiologic factors predisposing to chronicity may be present in any one case. Rational treatment will always depend, in a large measure, on their recognition and proper evaluation.

The treatment of chronic empyema prior to the introduction of Dakin's solution, as outlined in a previous article[1], was radical surgery, which was in a sense destructive. Obliteration of large cavities by collapse of the chest wall required extensive resection of ribs and often of parietal pleura, muscles, and perhaps scapula, or the soft tissues were used to help obliterate the cavity. These extensive operations were performed usually without any preliminary treatment, on patients more or less septic, debilitated, anemic and emaciated. Extensive areas of the operative field were smeared, if not flooded, with pus. A relatively high mortality, slow convalescence, deformity and impairment of function resulted.

Before the introduction of Dakin's solution, the only procedure representing a constructive type of surgery was the little used decortication operation. The more conservative methods of nonoperative treatment, such as attempted sterilization of the cavity by the injection of formalin in glycerine, or the use of bismuth paste, were regarded as of very limited application.

Happily, we are now in a position to cure some of these patients without having to resort to operative procedures, and many are cured with only a minor operation. In practically all cases, in which more radical measures are found to be necessary, we are able to sterilize the field or at least to attenuate any bacteria present to such a degree that postoperative infection from this source is not a menace. In the process of such treatment the patient gains weight and strength. His color improves, and, except in cases in which the chronic suppuration has resulted in irreparable damage, as represented by a nephritis, myocarditis, or general amyloidosis, the patient is converted from a poor to a relatively good surgical risk.

These results are achieved by irrigation with the hypochlorite solution. Other antiseptics have their advocates, and there are those who question whether equally good results might not be secured by irrigation with normal saline solution. The discussion of the relative merits of these various solutions is outside the limits set for this paper. It seems pertinent, however, to point out that the hypochlorite solution, besides acting mechanically like normal salt solution, is also markedly bactericidal and proteolytic; by virtue of these properties it dissolves the necrotic tissue and debris and exposes all infected areas to the bactericidal action, making sterilization complete. Whatever may be said in favor of any other solution does not alter any of these demonstrated facts with regard to the efficacy of the hypochlorite solution.

The considerations essential to success in the use of the hypochlorite solution are: that it must be of the proper strength, it must gain access to all infected surfaces and remain in contact with these surfaces long enough to exert its lytic and bactericidal action, it must be renewed often, and it must be of approximately neutral reaction; otherwise it is not Dakin's solution. Dakin specified that the content of free chlorin, which is the active principle, should be between 0.45 and 0.5 per cent. One difficulty with this solution is that it deteriorates rapidly, especially in sunlight, losing its active chlorin. One of the reasons for the greatly varying degree of success reported following its use is doubtless owing to the fact that solutions of greatly varying strength have been used.

I have found the "hychlorite" a convenient solution to use. It is fairly stable and, being originally eight times the required chlorin strength, permits of dilutions that contain the required amount of chlorin even after the stock solution has stood for a long time. Another advantage is that a solution containing more than 0.5 per cent of chlorin can be readily prepared. A more concentrated solution is advantageous in many cases of chronic empyema of long duration.

The technic employed at the Mayo Clinic is very simple. Most of the patients with chronic empyema have draining sinuses. A rubber catheter which fits the sinus snugly is inserted and the pus evacuated by aspiration with a glass syringe of from 30 to 60 c.c. capacity. The cavity is measured by filling it with saline solution under gravity pressure of perhaps 10 to 20 cm., using the barrel of the syringe as a funnel. The cavity is washed clean by alternately injecting and withdrawing salt solution with the syringe, great care being used not to inject an amount greater than that which represents half the capacity of the cavity. If the patient has not coughed or tasted the solution during this procedure the hypochlorite is used for further irrigations, which are performed at intervals of from one to two hours during the day and three to four times at night. The decrease in size of the cavity is ascertained by measuring its capacity once a week. The rate at which the cavity decreases varies with the size at onset, the duration, and many other factors, but generally the progressive decrease in capacity may be expressed graphically by a curve showing a rapid fall the first two weeks, then one less abrupt so that the smaller the cavity becomes the less the decrease proportionate to the original. In most cases the cavity would probably completely obliterate in time, but a stage is reached, after which the further decrease is quite slow. Usually this occurs when the cavity approximates 50 to 100 c.c. in capacity. If the residual cavity is of more than 100 c.c. capacity, decortication is the operation of choice, but in cases of long standing, and in those in which the cavity is shallow so that the amount of lung expansion would be at best small, a rib resection is usually performed, followed by further irrigation. For large residual cavities, a decortication is, in my opinion, advisable even if an additional circumscribed plastic resection may be necessary later.

Chemical decortication by an agent which would remove all the thickening of the visceral pleura without injury to the lung would be a distinct improvement over surgical decortication, which is limited to cases in which the pleura will separate, is often incomplete, and may result in a tear into the lung cortex. A 2 per cent alcoholic solution of gentian violet will remove the thickened pleura, but sufficient experience has not yet been accumulated to determine its value.

In case the cavity is small, under 100 c.c. capacity, a rib resection alone is performed, or the parietal pleura, if very thick and rigid, may also be excised. The irrigation is then continued. For very small cavities resection of a few centimeters of one rib may suffice.

Other methods of dealing with a residual sterilized cavity have been advocated. The establishment of a sterile pneumothorax by excision of the sinus tract or allowing the sinus to close spontaneously would seem ideal. Unfortunately, if there is a recurrence of the suppurative process, as may develop, the adhesions are prone to dissolve away and the cavity to enlarge rapidly so that the ground gained is lost. Probably in many of the cases, in which cures are reported by this method, investigation would show that such recurrences had developed. There may be no immediate marked symptoms of such recurrence. I have seen accumulations of pus latent for years, but associated with nephritis and amyloidosis. Perforation into a bronchus may supervene, especially in cases in which there is not sufficient thickening of the visceral pleura to protect the lung.

Another method which has been used with marked success for a period of observation extending over many months is one followed by Colonel Keller at the Walter Reed Hospital. He performs a preliminary rib resection and irrigates the cavity with hypochlorite solution until seven successive sterile cultures are obtained from smears from the depths of the cavity. The soft tissues are then mobilized and sutured in layers without further drainage. In my limited experience with this method the results have been promising.

A contraindication to the use of the hypochlorite solution by the closed method is the presence of a bronchial fistula of such size that in coughing the patient tastes salt solution when it is instilled. In some instances irrigation, even with hypochlorite, may still be possible with the patient in a certain position, but, generally speaking, open drainage is indicated. If the fistula can be exposed following rib resection, irrigation with hypochlorite solution is usually quite feasible, if the mouth of the fistula is temporarily plugged before each irrigation. The fistula is cauterized at intervals with the acutal cautery, or with silver nitrate, to destroy its epithelial lining. This is usually sufficient to bring about closure. Sometimes the bronchus lies near the periphery of the cavity, in which case the gradually progressing adhesions between the parietal and visceral pleura will help to obliterate it. Rarely a suture or plastic operation is necessary for closure of the bronchus.

In some instances a purulent discharge persists after prolonged irrigation by the closed method. This is usually owing to a secondary, imperfectly drained pocket, or there may be a foreign body present. In such instances rib resection and exploration is performed and secondary pockets are connected with the main pocket.

Fistulas recognized as tuberculous should be irrigated with hyochlorite solution with great caution, if at all. Sometimes the general condition of the patient improves because of the clearing up of the secondary infection, but, if the lung is not protected by a thickened visceral pleura, there may be bleeding and exacerbation of temperature. In tuberculous cases, in which there is involvement of the lungs, irrigation with salt solution is safer.

In operations for chronic empyema all possible measures should be taken to minimize the risk. A high operative mortality in the treatment of this condition, which, as a rule, is not inconsistent with years of life, seems unjustifiable. Local anesthesia, alone or combined with gas and oxygen analgesia is, in my opinion, the safest, and except in cases previously operated on in which there is much scar tissue, greatly thickened pleura, and much deformed or fused regenerated rib, such anesthesia has proved very satisfactory. A two-stage or several-stage operation is probably always less hazardous when radical surgery finally proves necessary.

In recapitulation it may be said that, (1) recognition of the cause of chronicity is the first step towards intelligent, efficient treatment of chronic empyema, (2) each case is a law unto itself with regard to treatment, and (3) conservation of life, structure and function should be the guiding principle, and chemical sterilization has made possible a distinct progress in this direction.

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PLEURAL EFFUSIONS

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Effusions into the pleura occasionally endanger the lives of patients and complicate the work of the general surgeon. No condition is so often unrecognized in physical diagnosis as an exudate within the chest. More physicians have been chagrined in consultation on cases not doing well, by the discovery of a large amount of pus, blood or serum in the pleura which embarrassed the heart and respiration of the patient, than any other thing of importance. The organs of the body are so correlated and interdependent that a routine examination of the entire body is essential, whenever any examination is required. For this reason one who narrows his vision and experience is often at a disadvantage. For many years aspiration of the chest has been practiced. A set of trochars were prized instruments in the emergency kits of our preceptors, and these little instruments, timely employed, relieved suffering and saved lives where drugs were of no value.

An effusion into the pleural cavity is, for the most part, a symptom of a condition rather than a separate disease. Infections, malignancy and circulatory disturbances are the main etiologic factors in producing it. Multiple serositis, a rare condition, may also involve the pleural sac and be accompanied by an effusion. It is, however, more prone to involve the peritoneal sac; its etiology is unknown.

It is generally acknowledged that a tuberculous infection, either primary or secondary, is a very common cause of pleurisy and is often associated with an effusion, and, while it is difficult to find the bacillus in the effusion, guinea pig inoculation will usually demonstrate its presence.

The next most common organism to produce a pleural inflammation is the pneumoccus. Some effusion is almost always present during the course of a pneumonia. Streptococcic infection in the blood stream often excites an inflammatory reaction in the pleura with an exudate.

Hydrothorax is usually classified as a noninflammatory condition and is a part of a general dropsy due to cardiac disease. When due to renal disease, or more properly renal obstruction, the hydrothorax becomes bilateral. This type, which is produced by a circulatory disturbance, is no doubt a symptom of failing compensation, associated not only with pathology in one of the main organs within the circulatory tract, but with changes in all of them, such as cirrhosis of the liver, interstital nephritis, arteriosclerosis and myocarditis.

Primary malignancy within the chest rarely occurs, whereas by metastases it is not uncommon, and it is often associated with an effusion. We have observed it in many cases following breast amputation and hysterectomy, where the malignancy was well advanced. In these cases the amount of effusion varies greatly and it may be so small as to cause little if any dyspnea, while again larger amounts may accumulate, and be limited usually to one pleural sac.

The history and symptoms of the disease that precedes the development of an effusion are important, as they guide us in making a prognosis. While the history may make one suspect the presence of an effusion, it is rather by symptoms and objective findings that its presence is discovered.

Inspection discloses a favored side or position, dyspnea, cyanosis and restriction of chest movements, the severity of which depends upon the amount of fluid. With the patient in an upright position, percussion reveals dullness over the fluid and sometimes hyperresonance above. By auscultation there is an absence of breath sounds over the fluid level and about the amount present, while the aspirating needle proves the condition and reveals the character of the fluid. Flouroscopy should be practiced wherever possible, because it not only shows the presence of fluid, but the displaced heart which may not be detected by the ordinary physical examination.

Flouroscopic examination in the upright position is the one of choice, as it reveals the fluid level, and when the position of the body is inclined to the right or left the same fluid level is observed. Flouroscopic or radiographic findings made in the prone position are misleading, as the shadow produced by a small amount of fluid is so diffuse that it may be overlooked, whereas a large amount of fluid obscures other pathology in the chest.

However, it is of some aid when comparing it with the findings of the radiograph made in the upright position. Obliteration of portions of the pleural sac with walled off areas of fluid give a different picture.

The treatment of a pleural effusion consists of the rather simple procedure of withdrawing the fluid from the pleural cavity. Independent of its

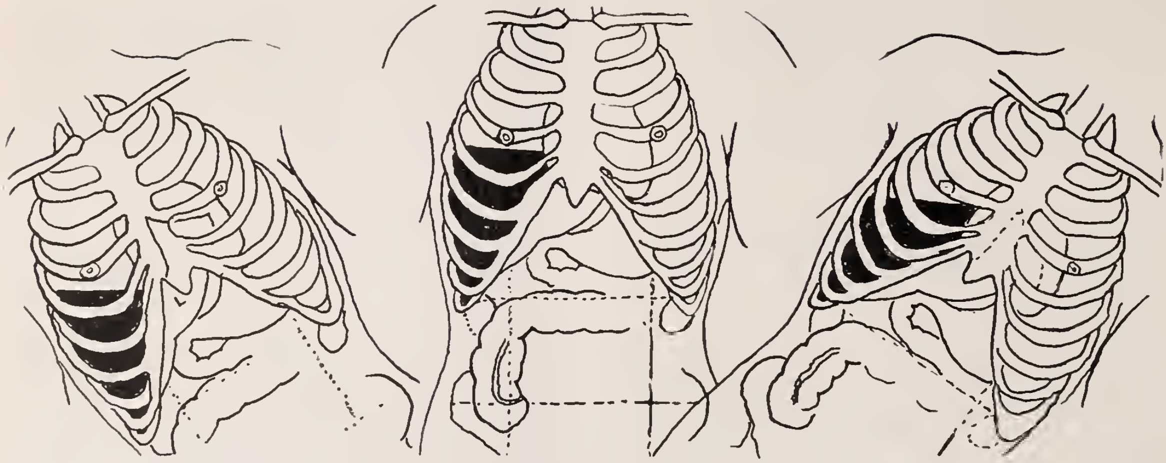

Fig. 1. Illustration showing free fluid in right pleural sac in upright position with level of fluid maintained when position of chest is inclined to the right or left.

etiology, when the amount of fluid in the cavity produces embarrassing symptoms it should be partially or completely withdrawn. If possible, the patient should be in a seated position with the arms and chest resting comfortably upon a firm support, such as a table padded with a pillow. This position is the most comfortable for the patient and facilitates the procedure.

The skin is painted with tincture of iodine at the site of puncture, which is usually between the midscapular and posterior axillary line in the seventh interspace. A local anesthetic is not necessary, if the puncture is quickly done with a sharp needle of a proper caliber, and, if repeated tappings are required, it should not be used. The upper margin of the rib is usually used as a guide to avoid injuring the intercostal nerve, artery or vein, altho the middle of the interspace is the best place to insert the aspirating needle, as the wall is thinest at that point and causes less discomfort to the patient.

Much of the success of this procedure depends upon the selection of the instruments. Too large a needle causes undue pain and the fluid may escape too rapidly, while too small a needle becomes obstructed. We have found a needle about four inches long with a caliber about 2 mm. to be the most satisfactory. Aspiration may be accomplished with the aid of a syringe for the purpose of determining the presence of fluid, but when large amounts must be withdrawn it is unhandy, slow, and the manipulation necessarily causes movements of the needle which are painful to the patient. Whether a large or small amount is to be withdrawn, an aspirating bottle, with a vacuum pump attached to a faucet, is most satisfactory. A noncollapsible rubber tube, with glass connections between the bottle and faucet and between the needle and bottle, permits visualization of the fluid as it passes into the vacuum jar. The glass jar is graduated and the amount and character of the fluid can be accurately determined.

Judgment must be used in the amount of fluid to be withdrawn. The first tapping must be done with care. The first sign of danger is a short hacking cough, and perhaps pain in the adjoining shoulder. One should avoid syncope, or great distress, and should discontinue and repeat as required. It is surprising what great relief the withdrawal of even a small amount of fluid produces.

We are warned of the great danger of infecting the pleural cavity by repeated aspirations, but with the usual rules of asepsis the danger is indeed small and, if infection occurs, it comes from within rather than without. This would seem true, if you stop to consider that we have tapped both pleural cavities in the same patient for over nine months on every other day in a case of hydrothorax without getting the pleural cavity infected.

Care should be taken not to injure the lung with the aspirating needle. When the heart is displaced, use greater precautions. When most of the fluid has been withdrawn, the lung expands and you can feel it strike the point of the needle. It is at this stage that the patient will complain of pain and the needle should be withdrawn immediately.

We particularly invite your attention to the history of a case of hydrothorax, or the "pleural spring," as it has been termed. Because of its unusual character and long duration we believe it is worthy of mention.

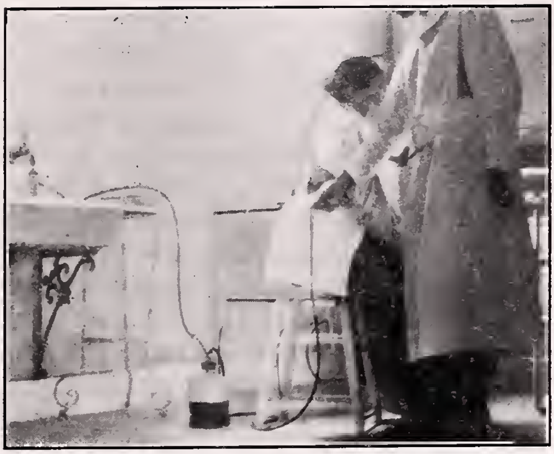

Fig. 2. Practical method of aspiration in case of hydrothorax.

Case I. Mrs. R., age fifty-nine, married and the mother of twelve children, normal births, menopause at forty-six, previous health good. Family history negative. First examined at the office, sent to St. Vincent's Hospital on March 2, 1922. Present trouble began in December, 1921, with gradual onset of symptoms, coughing, pain referred to upper abdomen, shortness of breath, scant urination, could rest only on left side, loss of weight.

Upon examination there was dyspnea, fast regular pulse, normal temperature; blood pressure—systolic 135, diastolic 100. Heart pusned to right, no valvular lesion. Tenderness over gallbladder; tonsils infected; upper teeth extracted; pyorrhea advanced in lower teeth; tongue clean. Uterus prolapsed, old laceration with rectocele and cystocele. Hemoglobin 75 per cent, white blood count and differential normal. The urine showed albumin and casts; Wassermann negative. Absence of breath sounds over base of right and left lung with dullness; some edema of the legs.

The flouroscopic and radiographic examination in the upright position showed a fluid level in both pleural cavities, higher on the right side. Aspiration of both pleural cavities was performed and a small amount of clear straw colored fluid removed, causing a temporary respiratory distress, but later great relief was experienced.

The remarkable feature about this case is the frequency with which we have been obliged to aspirate both pleural cavities. Both cavities were tapped every fourth day for a period of one month, and for the past nine months we have aspirated every second day for the reason that the respiratory embarrassment was so great that the patient could not rest or sleep.

We have aspirated each pleural sac over a hundred times, obtaining about ninety gallons of fluid, securing half a gallon from the right sac and one quart to three pints from the left each time. The fluid has remained sterile to culture. The patient's intake of fluid is that of any normal individual's, while the amount of urine passed in twenty-four hours averages about twenty-four ounces. The edema in the legs remains the same, while her general condition otherwise is good. The patient walks about the hospital and enjoys a good appetite.

The bilateral hydrothorax has probably been caused by a renal obstruction. Permanent drainage would mean infection of the pleural cavity. The renal obstruction would remain unchanged and death would, no doubt, be hastened. Medical treatment has not had any influence on this condition, but the repeated aspirations have compensated for the lack of kidney function.

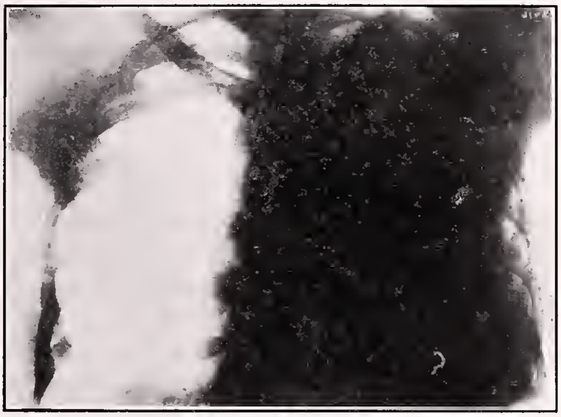

Fig. 3. Radiograph showing small amount of pleural effusion made in the prone position, illustrating diffuse shadow which obscures completely one-half of chest.

Laboratory Examination. The fluid is light yellow in color and turbid in appearance. Smears were made which showed pus cells, but no bacteria. Specific gravity was 1006. The fluid was negative to Fehling's and contained no bile. A quantative analysis was made, showing the fluid to contain 8 per cent albumin. Cultures were made on agar agar slants, blood serum and bouillon, all of which were negative at the end of forty-eight hours.

Case 2. In this case the diagnosis was carcinoma of the uterus and a hysterectomy was performed. Massive doses of radium were used in the pelvis thru a large drainage tube and also applied by vagina.

Mrs. L., age 41, married sixteen years, multipara, always been in good health up to three months previous to operation. Entered the hospital Dec. 4, 1921, with an advanced carcinoma of the uterus. Cervix markedly ulcerated, bladder involved, marked anemia, general weakness and loss of weight. Convalescnce was very slow but after three months patient left hospital much improved.

In August she developed a secondary metastasis in right pleura and lung, associated with a large amount of fluid in the pleural cavity. Radiographs in upright position showed the presence of pleural effusion with a fluid level extending to the upper margin of the third rib. A small amount of blood-stained fluid was removed at the first aspiration and amounts increased until one-half gallon could be withdrawn. Relief, general improvement and prolongation of life are evident.

Case 3. Mrs. B., age 55, two children. Had previously received radium treatments for uterine hemorrhage which had existed for ten weeks before treatment was given. Her condition had been diagnosed as malignant.

Examination revealed no palpable tumor and hemorrhage had stopped. There were no signs of malignancy and her general appearance did not suggest it. She was found to be suffering from dyspnea and flouroscopic examination revealed a large shadow in right pleural cavity, with a fluid level at the upper margin of the third rib. By aspiration on numerous occasions blood-stained fluid was withdrawn. This fluid had the characteristic appearance of that which has so often been found, where metastasis had occurred, and the laboratory findings were identical.

These findings govern the prognosis. Repeated aspiration is imperative and it is the only treatment that will prolong and make comfortable the life of such patients. The following is the laboratory report which compares with the findings in malignancy of the pleura.

Examination of 1000 c.c. of fluid showed 134 c.c. were free red blood corpuscles, of which the specific gravity was 1010. The fluid was turbid and bloody in appearance, with an alkaline reaction. After all traces of blood were removed, the fluid showed twenty per cent albumin. The fluid was negative to Fehling's and Benedict's. Cultures were made on agar agar slants, bouillion and blood serums. They were all negative at the end of forty-eight hours.

CONCLUSIONS

1. When a patient complains that breathing is embarrassed when lying on one side or the other and the respirations are accelerated, one should suspect fluid within the chest.

2. Radiographic examination of the chest should be a routine procedure before all operations and, in the presence of any postoperative complications, should be repeated.

3. Whenever fluid is discovered in sufficient quantity to disturb the respiratory or circulatory systems, it should be relieved by aspiration and repeated as often as necessary.

4. The character of the fluid, both as to its gross appearance, chemical and miscropic tests, is of importance from a diagnostic standpoint.

Relative Value of Surgery and Roentgen Ray in the Tretement of Hyperthyroidism. Edward P. Richardson, Boston (Journal A.M.A., March 24, 1923), states that a comparison of the cases treated by roentgen ray and those treated by thyroidectomy shows that the average results in all cases treated by subtotal thyroidectomy rae better than the results in a selected two hirds of the cases treated by roentgen ray. The metabolism shows a drop of about plus 10, as compared with plus 20 for the roentgen-ray cases; the pulse, a drop to 80, as compared with 90; the weight, a tendency to more persistent nad greater increase. The rate of fall in metabolism and pulse is about equal. The reason for this is that in certain of the patients who underwent ligation of both superior thyroid arteries, followed by thyroidectomy in two stages, the whole of the surgical treatment required four months, and in one case eight months for completion. In nine cases treated by immediate subtotal thyroidectomy in one stgge the sharp fall in metabolism and pulse and gain in weight are striking. Richardson says there can be no doubt that the average results in surgery are better than those following roentgen-ray tretment. The roentgen ray has a beneficial effect in certain cases of hyperthyroidism, but this effect is not sufficiently constant to be relied on.

DUODENAL ULCER*

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When listening to the presentation of a subject by one who limits his work to certain lines, it is natural for some of the audience to be prejudiced. They fear that the speaker, thru inexperience or narrowmindedness, may have a tendency to present one phase only of a relatively common condition, and to ignore the fact that the correlation of many branches of medicine is essential in arriving at the ultimate diagnosis.

I will endeavor to present in an open and unbiased manner a series of one hundred consecutive cases in which a diagnosis of duodenal ulcer was made. I have had the opportunity, with the help of my associates, of viewing these cases from all angles, and have followed every surgical gastrointestinal case to the operating room. In a series of one thousand, seven hundred and twenty-five patients subjected to routine gastrointestinal examination, one hundred duodenal ulcers were diagnosed, equaling approximately seven per cent of the total number complaining of stomach symptoms.

The study of this comparatively common lesion, if properly conducted by clinician and roentgenologist, affords great satisfaction because of the high percentage of correct diagnoses proven by operation. We must, however, establish and adhere to a definite routine in our mode of examination. As soon as we deviate from such a routine, the differential diagnosis of diseases of the gastrointestinal tract ceases to be exact and we face a chaos of indefinite ailments, all producing stomach symptoms.

Knowledge of the pathology of duodenal ulcer is of great importance to the roentgenologist, for the position and character of the lesion definitely influence the diagnosis. Approximately ninety-five per cent of these ulcers occur in the first inch and a half of the duodenum. A small percentage is situated in the remaining portions. When so situated, they present, as a rule, marked clinical symptoms but no characteristic roentgen signs and practically always fail of demonstration surgically. Altho these ulcers inaccessible to surgical exploration are few, they occasionally are the cause of unnecessary removal of gallbladder or appendix. It is also possible that some of these patients may return to the clinician later, and because of the negative findings on surgical exploration are classified incorrectly as functional hyperacidity cases.

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The average duration of symptoms of duodenal ulcer in this series was twelve years. Every ulcer must have a beginning. A recent one, as a rule, presents characteristic symptoms, lacking only chronicity, and generally exhibits definite x-ray findings. The intrinsic spasm causing bulbar distortion is usually as extensive at this time as in after years.

We have seen three cases of duodenal ulcer diagnosed by x-ray within the first year of symptoms. Two of these diagnoses were confirmed by reexamination two years and six years later, respectively. An ulcer of this early type may be small and shallow, a mere slit in the mucosa, producing no marked evidence on the external coat of the bowel, so that its presence is determined by the surgeon only on palpating carefully the slightly thickened ulcer area or at times on incising the duodenum.

It is the ulcer in this stage that occasionally is overlooked by a surgeon inexperienced in the pathology of the early type. When the clinician and roentgenologist after careful study agree that an ulcer is present, the surgeon is justified in excluding the presence of ulcer only after thoro careful exploration of the duodenum. If, however, after careful inspection, no ulcer is demonstrated, he should never perform a gostroenterostomy, as it is probable that unnecessary gastroenterostomies are performed more often than are duodenal ulcers overlooked. Failure to feel an induration thru a lower abdominal incision does not exclude the presence of a recent ulcer.

The infectious origin of duodenal ulcer has received considerable attention recently and Rosenow's very creditable work on the elective localization of the streptococcus has thrown a great deal of light on the etiology. In reviewing our histories, it was of interest to note that seventy-six per cent of these patients had markedly diseased tonsils, dental abscesses or pyorrhea. Many had more than one focus of infection.

Before discussing the two important factors in the diagnosis of duodenal ulcer, I wish to give a brief summary of the gastric analyses of this series. The average free hydrochloric acid was forty; the average total acidity was fifty-six. The lowest free acidity, not including a few showing total absence of free hydrochloric acid following hemorrhage, was twelve; the highest free acid was seventy-six. It would appear, therefore, that analysis of the stomach contents, as commonly employed, is of little help to the clinician in the diagnosis.

The diagnosis of duodenal ulcer depends upon two salient factors: Carefully obtained clinical history and the proper interpretation of x-ray findings. All other procedures are largely frills of no particular diagnostic value. On reviewing these hundred cases, the point which impressed us most was the agreement between the final clinical and x-ray diagnoses.

It is relatively rare to find x-ray evidence of duodenal pathology without at least a strongly suggestive history; and, conversely, the roentgen report when returned to the clinician seldom disapoints him, if he has sufficient clinical evidence to suspect strongly the presence of an ulcer. When frequent differences affecting the final diagnosis arise between these two departments, they are generally due either to an unbalanced ratio of proficiency or to a lack of confidence in the other's judgment.

The clinical histories of this series may be summarized as follows: Eighty-two per cent gave a typical duodenal ulcer history; fourteen per cent a suggestive history which may or may not have meant ulcer, and four per cent gave an indefinite story in no way leading the clinician even to suspect ulcer.

The final clinical and x-ray diagnosis agreed in ninety-seven per cent, all but three cases. In one of these the clinician was proven correct, in another the roentgenologist was correct, and the third received merely a tentative clinical diagnosis of ulcer and was advised to return at a future date for further study.

Two of the three total disagreements between clinician and roentgenologist were encountered among the eighty-two per cent of patients who gave a definite history of duodenal ulcer. The clinician was proven correct in one; the remaining case is still open to arbitration.

Of the fourteen cases presenting only suggestive histories but with positive x-ray findings of duodenal ulcer, six were referred to the surgeons, and the x-ray diagnosis was confirmed in each case. Three of the four cases with vague indefinite stomach symptoms, in no way leading the clinician to suspect duodenal pathology, but with positive roentgen diagnoses of duodenal ulcer, were operated on and an ulcer was demonstrated in each.

The so-called typical history of duodenal ulcer is of great importance and I wish in no way to detract from its high value in the diagnosis of such a lesion. But if one depends solely on the history, many ulcers will remain undiagnosed, as eighteen per cent of this series gave anything but a classical history.

In those cases with definite ulcer symptoms the roentgen ray is of great value in confirming the diagnosis. In the groups presenting suggestive and indefinite histories, the roentgenologic examination will determine or exclude more ulcers than the combination of all other diagnostic means, providing the examiner will distinguish between reflex spasm and an organic gastroduodenal lesion.

The roentgenologic determination of duodenal ulcer, according to our records, has been the most accurate method of diagnosis. Forty-six cases, diagnosed by the x-ray as duodenal ulcer, were operated on and the diagnosis confirmed in forty-two.

The four mistaken diagnoses may be summarized as follows:

The first, Mr. H., markedly deformed from infantile paralysis, had had three previous abdominal operations, two cholecystotomies, a later cholecystectomy and surgical reports of three negative examinations of the duodenum. I examined him three times and did not find the lesion. The patient was diagnosed duodenal ulcer by the clinician in spite of three negative x-ray and surigcal reports and an ulcer was found at the fourth operation. This is the only case where the medical department diagnosed an ulcer which was not confirmed by the roentgenologist.

The second, Mr. R., had chronic appendicitis. He gave a typical history and strongly suggestive x-ray findings of ulcer. This mistake probably would not have been made if our customary routine of rerayiug all such cases with full relaxation from belladonna had been followed, and extrinsic spasm thus eliminated.

The third, Mr. H., received a negative clinical and x-ray diagnosis of ulcer. Perforation of the duodenum occurred a few weeks later.

The fourth case, Mrs. R., gave a typical history and definite x-ray findings of ulcer. The surgeon reported that the duodenum looked suspicious on account of a slight deformity, but no ulcer was seen. The appendix was removed. Four months later the patient returned, complaining of the same symptoms and reexamination again showed a markedly deformed duodenal cap. The medical and x-ray departments are still of the opinion that an ulcer exists but, owing to the surgical report, this case is included among the errors.

Accurate statistics as to the diagnosis of duodenal ulcer can be obtained only by the actual demonstration of the lesion on the operating or postmortem tables. As to the cases in this series which have not been operated on, no definite conclusion is attempted. Many errors may have occurred. It seems, however, conservative to assume that the correct diagnosis in the unconfirmed half of this series may bear the same ratio as the forty-eight cases with surgical records.

I shall now attempt briefly to give my impressions of the x-ray side of this study. I may appear to be overemphatic or overenthusiastic on certain phases, especially the administration of antispasmodics. Some of my colleagues say that I am. I respect their opinions, but am convinced that the elimination of extrinsic spasm is one of essentials of correct gastrointestinal roentgenology. For the mistakes I have made I have no alibi. I was dealing with purely misinterpreted objective findings and was wrong.

Constant deformity of the duodenal bulb, persisting on reexamination after the administration of an antispasmodic to full physiologic effect, is the most trustworthy sign in the diagnosis of duodenal ulcer. A duodenal bulb of normal contour can safely be assumed as denoting no ulcer. It is true that a few cases of duodenal ulcer presenting a normal bulb have been reported. But these are so extremely rare that for all practical purposes this knowledge can be ignored. When a roentgenologist fails to find an ulcer it is usually due to his inability to interpret the findings correctly and not to the method employed.

Not all abnormalities of the duodenum discovered on a single examination mean ulcer. Technical errors and the various reflex disturbances may cause a deformed bulb, which may easily be misinterpreted as denoting ulcer, if the examiner is not constantly on his guard. The common technical errors are due to allowing insufficient time to prepare the examiners' eyes before fluoroscopy, incomplete filling of the first portion of the duodenum, and attempting to diagnose duodenal ulcer solely from a few radiographs. Attempting a diagnosis from a few films of the duodenum without previous fluoroscopic findings does more harm than good.

Most errors in the diagnosis of this lesion are due to failure to exclude extrinsic spasm. Occasionally, when a stomach is affected reflexly, the resulting hypertonicity pylorospasm will prevent the examiner from filling the duodenal bulb sufficiently, thereby preventing him from saying definitely that an ulcer does not exist. Chronic appendicitis and cholecystitis frequently produce such extrinsic spasm and the danger of error is probably greatest in confusing these conditions with ulcer. Unless the roentgenologist rules out these reflex disturbances, many such conditions will be diagnosed duodenal ulcer.

We make a routine of reexamining, under an antispasmodic, every case not giving a definite typical history and positive roentgenologic findings. If this rule had not been strictly adhered to, many more mistakes in diagnosis would have been made. I have never yet seen an extrinsic spasm of the stomach persist after full doses of belladonna had been given, but have seen on many occasions supposed duodenal ulcers and even supposed organic pyloric stenosis disappear under its influence.

Within the past month I have had the opportunity to examine a patient who had received a previous diagnosis of organic pyloric obstruction with practically complete retention of the barium meal at the end of six hours, and from all objective appearances the diagnosis seemed correct. This patient was reexamined under belladonna four days later and a definitely normal stomach and duodenum were seen with not the slightest evidence of gastric stasis. Operation revealed a markedly inflamed gall-bladder.

Considerable attention is at present being paid to the x-ray diagnosis of gall-bladder disease, both from direct evidence, such as demonstrating gall-stones on a film, and the indirect signs pertaining to changes in the contour of the pylorus and duodenum. It is a fact that, due to improvement in technic and mechanical equipment, more gall-stones are now shown, and it is also true that a distended gall-bladder, if the patient is viewed in the proper position, may show a definite smooth concavity due to pressure on the filled pylorus or duodenum. However, too much importance is being placed on gall-bladder adhesions as a cause of duodenal deformity, confusing that diagnosis with duodenal ulcer.

If these cases were reexamined under full relaxation from an antispasmodic, many so-called adhesions would disappear. In our series of two thousand gastrointestinal examinations over one hundred diseased gall-bladders were removed, and not one had given an x-ray deformity of the duodenal bulb which confused it with ulcer. Several at least would have been diagnosed duodenal ulcer, had we not reexamined them under full doses of an antispasmodic to eliminate extrinsic spasm.

The x-ray findings of chronic cholecystitis like chronic appendicitis are diagnostic, if we operate only on those cases exhibiting difinite x-ray signs. A roentgenologist never knows how many pathologic gall-bladders or appendices he fails to diagnose, unless he has a complete check on the surgical records. A negative x-ray examination of a gall-bladder or appendix does not by any means determine that they are not diseased. In fact, it is at times difficult even for the surgeon, after he has the gall-bladder in his hand, to say definitely whether or not it is diseased and only after sectional and close inspection of the mucosa is the question finally settled.

The indirect signs of the radiologic diagnosis of duodenal ulcer, such as gastric retention, hypertonicity and hyperperistalysis, are of interest and occasionally afford additional information but they in no way compare in value with the persistently deformed cap.

Considerable gastric retention at the end of six hours, except in an enteroptic person with a marked hypotonic stomach, is generally indicative of gastric or extragastric pathology. Gastric retention accompanied by hyperperistalysis is strongly suggestive of duodenal ulcers or a moderately recent pyloric obstruction. Thirty-four per cent of the ulcers in this series showed gastric retention, twenty-four per cent hyperperistalysis and forty-eight per cent hypertonicity.

Increase in gastric tone is a frequent finding in duodenal ulcer and is due either to a reflex from an irritated ulcer, stopping short of a general reflex gastrospasm, or from an effort to overcome beginning stenosis of the duodenum.

SUMMARY

1. The chief factors in the diagnosis of duodenal ulcer are a carefully obtained clinical history and properly interpreted x-ray findings.

2. With a typical history of ulcer it is possible for the clinician alone to diagnose accurately approximately eighty per cent of duodenal ulcers.

3. Fourteen per cent of the ulcers in this series would not have received a definite diagnosis, had it not been for the x-ray findings. The clinical diagnosis in those presenting a typical history was fortified by confirmatory x-ray evidence.

4. Persistent deformity of the duodenal bulb found on reexamination, after obtaining full physiologic effects of an antispasmodic, is the most important sign in the diagnosis of duodenal ulcer. This statement was proven by operation to be correct in 93.5 per cent of cases diagnosed duodenal ulcer by the roentgenologist. The value of the negative x-ray findings in excluding ulcer was even higher. We have record of only one ulce

not diagnosed by the x-ray, which was found in approximately three hundred operated cases, in which the duodenum was examined.

5. All patients complaining of gastric symptoms should receive a routine clinical examination before being referred for roentgen study, as eighty-eight per cent of such patients have lesions other than those of the stomach and duodenum.

6. Roentgen diagnosis is a branch of internal medicine. The roentgenologist and clinician must work in unison. Each is indispensible to the other in arriving at the ultimate diagnosis.

GASTRIC AND DUODENAL ULCER, MEDICAL AND SURGICAL ASPECTS PREOPERATIVE AND POSTOPERATIVE TREATMENT*

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ETIOLOGY

The stumbling blocks in the road of eventual, successful treatment of gastric and duodenal ulcer are the unsolved questions of pathologic physiology and etiology. Various theories of etiology have been advanced.

A good summary is given by Cheever: (1) mechanical, thermal or chemical trauma, (2) infection of mucous membrane by infarction emboli of bacteria, (3) trophic disturbances, comparable to Reynaud's disease, (4) systemic disturbance, such as in extensive cutaneous burns, (5) faulty pose interfering with circulatory tone, (6) infection with specific fungus, oidium albicans.

Besides these an indispensable factor is considered to be the corrosive action of gastric juice in the prevention of healing. However, a fact which opposes even this theory is the report of a number of cases of gastric ulcer in stomachs containing no hydrochloric acid. Eusterman attempts to explain these unusual cases on the basis of general systemic pathology, such as tuberculosis, anemia, gout, pellagra, diabetes, and syphilis, or local conditions, such as chronic gastritis, pancreatitis and underlying malignant degeneration.

Hardt has demonstrated by kymographic tracings that the pain in these achlorhydria cases is explained by peristalsis of the active hunger type. He says that food, alkalies, water, emesis and lavage inhibit the hunger type of peristalsis and replace it by the non-painful digestion type. In what way alkali relieves ulcer pain in anacidity, no explanation is made.

A careful x-ray study of the relation of peristalsis to pain is reported by Reynolds and McClure. Patients with ulcer were fed meals composed of meat and barium, following which were observed the gastric motor phenomena during the occurrence of pain. In normal subjects it was found that, as each wave approached the sphincter, the latter opened, allowing chyme to be injected into the duodenum over a period of about ten seconds. The abnormal phenomena in ulcer cases were modifications of the motor activities of normal stomachs.

These abnormal findings were: First, an abnormal type of normal gastric peristalsis; second, irregularity in time of occurrence, depth and length of peristaltic waves; third, partial or intermittent spasm of the pyloric sphincter; fourth, localized permanent spasm of the gastric musculature, causing the so-called incisura; fifth, gastric antiperistalsis; sixth, delayed emptying time of the stomach; seventh, very rapid emptying time. The onset of the pain was accompanied by modifications of the usual type of motor activities for the particular stomach under examination. From the clinical standpoint the most important feature is the fact that the disappearance of pain occurred simultaneously with the cessation of the unusual motor phenomena.

To summarize the etiology according to Cheever, thru some cause, probably infarction with thrombosis, death of the mucous membrane occurs, followed by corrosion with gastric juice. Such an abrasion usually heals. The one that does not progresses to a chronic ulcer with granulation tissue and subsequent scarring, which often makes healing imperfect or impossible.

The pathologic physiology is just as obscure as the etiology. The pain is not due to acid, as proved by the induction of acid into the stomach, in one case directly to the raw surface of the ulcer. However, as mentioned before, the consensus of opinion seems to be that a typical peristalsis or spasm is the cause of pain.

The steps in the process are: First, irritation of the exposed nerve endings by the acid gastric juice results in increased peristalsis and increased tension; second, the hyperacid gastric juice acts upon the duodenum causing pylorospasm; third, this causes delay in gastric emptying and increased ulcer irritation, followed by violent peristaltic painful contractions. This is a typical vicious circle.

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TREATMENT

When considered from the viewpoint of etiology and pathologic physiology, there should not be any severe conflict between surgical and medical treatment. Let us consider the facts. A large number of acute ulcers cure themselves. There is also a very large number with a distinct tendency to chronicity which will be cured by medical treatment. These statements are borne out by unquestionable medical statistics. Eggleston reports 72 per cent with no recurrence after three years. Sippy publishes even better results. The cures are proved not alone by disappearance of symptoms, but by x-ray demonstration and in a few cases by postmortem examination. The explanation of the medical cure is thru the removal of certain factors in ulcer formation. They are briefly, correction of hyperacidity, hypersecretion and pylorospasm, improvement of the patient's health as a whole, and the removal of possible foci of infection, such as infected teeth, tonsils, etc.

The scope of this paper does not permit a detailed explanation of medical treatment. However, I will pass out for those interested copies of the Sippy diet, such as we use routinely in ambulatory and bed patients. There are a few points of interest which I may mention in this connection. According to the statements of F. W. White and Alvarez, the early control of symptoms ordinarily has not been difficult. The most important factor, according to them, is the difficulty in keeping the patient on a strict regime for a year or more. It is oftentimes surprising how easily early symptoms clear up, both in ambulatory and hospital cases. On the other hand, we are all familiar with the difficult problem of obtaining cooperation of the patient for medical treatment over a long period.

The objections to medical treatment and its failures are to be explained principally by the pathology. Ulcers that have too dense scar tissue naturally will not heal. True pathologic stenosis, hour glass deformity, possible malignancy, recurrent hemorrhage, acute and subacute perforation are objections to medical treatment. Let me mention in this connection, according to Deaver, that 20 per cent of old callous ulcer cases perforate unless operated upon.

The argument for surgcial treatment is very good. Correction of retention, relief of pylorospasm and reduction of acidity are obtained. And in some cases the ulcer is removed. Results are comparatively good. Seventy-five per cent of gastric cases and 95 per cent of duodenal are cured, with an operative mortality in the neighborhood of 1½ per cent. The problem of the surgeon is harder than that of the medical man, because he gets the cases incurable medically. Considered in this light, the results are extraordinarily good. On the other hand, there is room for improvement.

The ordinary operation is gastroenterostomy. With this operation, according to Eggleston, 11 per cent of those who have hemorrhage preceding operation had hemorrhage afterward. In some operated cases, the ulcer goes on to perforation in spite of the gastroenterostomy. Occasionally new gastric ulcers develop and, finally, in approximately 3 per cent of cases gastrojejunal ulcer occurs. Many surgeons admit that there is not much advantage in gastroenterostomy alone, unless there is gastric retention from obstruction. An attempt to eliminate these failures has resulted in a general tendency toward removal of the ulcer in addition to the ordinary operation. This is done in various ways—incision, cautery, sleeve resection, pylorectomy, gastrectomy, etc.

Further argument for the removal of gastric ulcers is the report of the Actuarial Society of America upon cases operated on at the Mayo Clinic. Seventeen per cent of those operated on for gastric ulcer died in 3.6 years, as opposed to 5 per cent for duodenal ulcer. This latter percentage is practically the mortality rate of a similar general population. Balfour reports 1280 of gastric ulcers operated upon, with 195 deaths from cancer at the end of six years. Of these reported during the operation as "ulcer too large for removal, adherent to posterior wall," 40 died of cancer within two years. Pathologic examination of tissue at the time of the operation is unsatisfactory. Fifty per cent of such pathologic examinations, reported as benign, checked later, proved to be carcinoma. The cancer death rate after cautery removal was 3 per cent, partial gastrectomy 3.3 per cent, sleeve resection 0 per cent. This is a strong argument for sleeve resection when possible.

It seems to me that the surgeon should make every attempt to remove the gastric ulcer. For, let me repeat, unless it be removed, one out of five dies of cancer.

POSTOPERATIVE CARE

It is believed by most writers on the subject that a certain percentage of surgical failures are due to poor postoperative supervision. In spite of this fact, it is hard to find in the literature any systematic methods of after care in surgical cases. There should be closer relations between the surgical and medical methods of treatment. Both have the same purpose in view, namely, lower acidity and rest to the diseased area.

It takes from fourteen to twenty-one days for the healing of the stomach after the surgical procedure. This is an important period in the prevention of new ulcers. After the first few days of liquid diet and up to the twenty-first day the patient should be on a fairly strict regime of the Sippy type, with frequent feedings and alkalization. Following this there should be a diet of three bland meals a day, and a midmorning and midafternoon glass of milk with Sippy powders between feedings. I think that these directions should be followed for three months. The next three months the same diet should be used, leaving out the powders. The second half year, if symptomless, should be simply a matter of a bland diet.

The patient should be required to report once in two weeks the first three months and once a month afterwards. He should be instructed to report immediately any stomach symptoms. In this event a modified Sippy regime should be instituted. Finally, at the end of the year, before discharge, there should be carefully explained what we are want to call the ulcer tendency, the importance of chewing food carefully, the danger of overeating, avoidance of excess of coarse vegetables, proper care of teeth, need of exercise, etc. He should be told particularly the necessity of immediate consultation, if symptoms recur.

Since patients respond better to printed directions, I have prepared a postoperative chart which I will pass around for your inspection.

DIRECTIONS TO POSTOPERATIVE ULCER CASES

During Stay in the Hospital. Mixture of milk and cream 4-oz. every two hours, alternating with powders every two hours, with occasional feedings of cereal and soft boiled eggs.

First Three Months After Operation. Eat three small meals a day. The chief articles of diet should be milk and cream, cereals, bread and butter, eggs, potatoes, tenderly cooked vegetables or purees and cooked fruits. Bacon, chicken and fish and a small amount of meat are permitted. The meat should be boiled or roasted. The cereals should be well-cooked. Eggs may be taken in any form except hard boiled or hard fried. Potatoes may be prepared in any form except fried. All vegetables must be tenderly cooked. All soups permitted. Cooked and canned fruits allowed. Desserts should be the simple puddings and custards, and icecream.

Take midway between meals a glass of milk. Take midway between all feedings the powders as directed. Report every two weeks to the office for observation and consultation.

Second Three Months. Omit the powders but otherwise follow the same directions.

Remainder of the Year Following Operation. Follow the same diet list, omitting both the powders and the milk between meals. Report once a month to the office.

General Advice. Avoid worry and overwork. Keep the teeth in good condition. Masticate food very thoroly. Get plenty of sleep and a reasonable amount of exercise. Report immediately to the office if any of the old symptoms return or if any new symptoms appear. *This is very important.*

Advice on Discharge. Lead a healthy life with the proper amount of exercise, work and rest. A general mixed diet is permitted. Avoid large meals, rich foods, raw vegetables and pastry. Use coffee and tea very moderately. Since some people who have had stomach ulcers have a tendency to get them again, you should report immediately any recurrence of your stomach trouble.

PREOPERATIVE TREATMENT

This has been well considered by D. L. Berkman. He narrows it down to gastric retention. In cases of gastric retention the two conditions to be combated are malnutrition and dehydration. The treatment consists of gastric lavage once or twice a day and liquid diet, with a milk and cream mixture every two hours until the patient seems better as judged by appearance of his skin, color and weight. The importance of these measures is borne out by statistics. Of the duodenal ulcer cases that died from their operation, one out of two had had retention.

The one other important consideration in preoperative care is transfusion in the severely anemic. This naturally has its place.

CLINICAL CASES

I wish to present two cases which may bear out certain points in this paper. For statistical value I realize that sufficient time has not elapsed to make them worth a great deal. It is generally accepted that observation must cover a period of at least three years.

Case 1. Age 51, male, married. Family history unimportant. Personal history. Uses a moderate amount of tobacco. Previous diseases. Diphtheria and scarlatina as a child. Inflammatory rheumatism fifty years ago.

Chief complaint. Stomach trouble for fifteen years. Getting gradually worse in past five years. Began as heart burn. Later on had pains about three hours after meals. These showed a tendency to periodicity. Relieved by eating, by soda or emesis. Has had night pains at times. Eats a fairly bland diet. No history of bleeding or tarry stools or jaundice.

Diagnosed in Portland at a prominent clinic as duodenal ulcer, where operation was advised and refused. No real relief followed from medical treatment.

Physical examination negative, except moderate tenderness in epigastric region, localized to a small area. X-ray examination showed deformed duodenal cap with delayed emptying time. Urine, blood count, and Wassermann negative. Test meal 72 per cent acidity, 50 per cent free. No blood.

X-ray of teeth showed several apical abscesses.

Diagnosed duodenal ulcer. Operation advised and again refused. However, he consented to the removal of abscessed teeth.

Report over a year later was to the effect that he had never had any symptoms since the removal of the teeth. Moreover, he had not been careful about his diet.

I feel that this case is supportive evidence of Rosenow's experimental work, showing the selective action of bacteria from foci in the mouth. I realize, however, that this may have been one of the cases that heal themselves. It is offered for whatever it may be worth.

Case 2. Preoperative diagnosis gastric ulcer. Postoperative diagnosis, gastric ulcer, perforating type.

Postoperative notes: In the hospital no pain or gastric symptoms. Sent home with a modified Sippy diet. Patient lived out of town and did not report regularly for observation. There was no recurrence of symptoms for six months. Then he started chewing tobacco, whereupon his pains began to return. He was put on five feedings a day and seven powders with stomach washing at bed time. His symptoms immediately disappeared. He felt alright on a modified Bassler hyperacidity diet for three months. Then a dietary indiscretion brought pain for a short time. Since then, for a year, on a bland diet without alkalis the patient has been free of symptoms.

I feel that this case could easily have become a severe relapse and illustrates, perhaps, the importance of persistent postoperative supervision.

SUMMARY

1. The etiology of peptic ulcer is as yet undetermined, altho certain factors are generally accepted, namely, (a) Infarction, with tissue death, (b) the corrosive action of the gastric juice.

2. The pathologic physiology is not solved. The cause of pain is unknown, altho it seems to be connected with a typical peristalsis or spasm.

3. There should be less conflict between medical and surgical treatment. Both are logical in their place when considered in relation to the pathology.

4. Surgical treatment for gastric ulcer should include removal of the ulcer whenever possible, as borne out by postoperative statistics.

5. To help to improve surgical results a definite scheme of postoperative care should be followed out. To facilitate this procedure there is presented a chart to be given to the patient.

6. The importance of preoperative care in retention and bleeding cases is shown.

7. Cases illustrating etiology and postoperative care are presented.

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PROSTATIC OBSTRUCTIONS*

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Aside from acute inflammatory conditions, obstructive lesions at the neck of the bladder are either gland hyperthrophy, fibrosis or malignancy, and generally spring from the prostatic gland. Gland hyperthrophy generally occurs in the prostate, but occasionally in the trigone or urethra.

The prostate gland has within its confines numerous racemose glands, arranged circularly about the urethra. For some reason it appears that at about the age of fifty-five one or more of these glands proceed to grow and tend by pressure from continued growth to cause an atrophy of the remaining gland, together with the intervening stroma, so that at the conclusion of this process there are one or more large adenomas within the capsule of the prostate and practically nothing else except the urethra.

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Whether it be metastatic inflammatory, or whether it spread by contiguity from the seminal vesicles or prostate gland, one frequently finds a fibrosis of the prostate and vesicle neck obstructive to evacuation of the bladder. This fibrosis is quite even and continuous about the bladder neck and its contripetal pressure is augmented by a hyperplasia of the encircled mucous membrane and of prostatic glands enmeshed in the fibrosis.

Obstructive malignancy, for some unknown reason, most commonly begins in either the seminal vesicles or the posterior lobe of the prostate. In this respect it is quite different from glandular hypertrophy, which most commonly is found in the lateral and middle lobes. From these points the malignant tumor spreads centrifugally along the pelvic floor or facial planes to and into the pelvic bony structure.

DIAGNOSIS

The prostatic adenoma thruout its growth is confined by the prostatic capsule, from which circumstance it derives its symmetrical contour and isolation, differing in this respect sharply from carcinoma. It, therefore, has a quite uniform, soft consistency, spherical contour and is mobile and not fused with the pelvic fascia or bony structure.

Since the prostate rests upon the firm pelvic floor, enlargement must proceed at right angles to the plane of the floor, mainly upward and necessarily into the base of the bladder. Cystoscopic examination will reveal the extent of this change. The projection into the base of the bladder is generally not symmetrical, tho in some instances the middle and lateral lobes will be on the same plane, or the lobes may be tightly molded in the capsule and appear in the bladder as a symmetrical cone. At other times the lobes will appear separated by sulci. Adenomas springing from the urethral mucosa or the trigone generally are comparatively small, pedunculated and interfere with micturition thru ball-valve action. When fibrosis causes the obstruction, there is, of course, an absence of tumor either by palpation or inspection. On the other hand, the tangent of the fibrous ring which crosses the floor of the urethra appears as a transverse bar, elevated considerably above the level of the floor of the bladder and urethra.

Objective findings in very early cancer of the prostate are apparently difficult to discern. It is the patient's complaint of pain, dysuria or burning, singly or in combination, that demands explanation and relief. At this time one may be able to feel or see very little out of the way. When growth has reached the stage where it can be palpated, it will be found generally in the posterior lobe, by which circumstance its projection is prominent toward the palpating finger in the rectum. It is notably firm, has an uneven surface, caused by marble-like proturbrances on the surface. It is also relatively immobile, probably from an involvement of the lymphatic vascular system surrounding. The extension laterally of the carcinoma between the pelvic fascia and the peritoneum produces a firm flat floor, extending laterally to the bony pelvis. At first little can be seen in the bladder or urethra. Ultimately the growth may appear here and then is recognized by its bazaar appearance.

SYMPTOMS

From the standpoint of symptoms, the onset of hypertrophy of the prostate is extremely insidious and the loss of free micturition is often not perceived. Complete retention following chilling is frequently the first alarming symptom to the patient, or he will seek relief from disturbance at night. At this time tumor and residue of the urine will be found and the nature of his trouble diagnosed.

A steadily increasing residuum of urine proceeds in step with the growth of the tumor and, so unnoticed it is in some cases, that the patient may complain only of enlargement of the abdomen.

Residuum of urine favors infection and when this occurs cystitis is superadded. Under the lash of cystitis the bladder may expel more of its contents and so the residual urine may diminish in amount. Nocturnal diuresis, so frequently observed in these cases, may be interpreted as evidence of impairment of renal function from back pressure.

Fibrosis is of inflammatory origin and arises, probably, from infection of the seminal vesicles or prostate. This circumstance probably accounts for the high degree of bladder irritation which accompanies the obstruction The bladder is much more likely to be infected in these cases and residual urine is relatively small on account of hypermotility thereby induced. Pus in small amounts is usually found in the expressed fluid of the seminal vesicles and prostate.

In hypertrophy and fibrosis of the prostate there is little pain complained of, but in cancer it is almost the earliest symptom. In all cases of prostatic obstruction, in which the patient complains of much local pain and particularly if the pain radiates into the hip, thigh or cecum, cancer should be thought of. Early infections of the bladder are characteristic in cancer and residual urine is never large.

TREATMENT

Hypertrophy of the prostate requires enucleation. If the patient's general condition has been rendered bad by urosepsis and loss of rest, recumbancy, intermittent catherization, instillation of small amounts of argyrol, 10 per cent will frequently do much good. Those having a large residuum of sterile urine, especially if there be much nocturnal diuresis, should have the benefit of so-called decompression, namely, a very slow lessening of the amount of residual urine thru an indwelling catheter connected to a discharge tube, elevated sufficiently at the distal end to permit of the urine escaping in drops, about fifteen to twenty to the minute. This measure is a defense against anuria of too sudden relief of back pressure.

The two-stage suprapubic method, with proper exceptions, is probably the best. The purposes of the two stages area (1) to lessen shock, (2) to immunize gradually the patient to the necessary infection of the bladder, (3) to prepare him for enucleation by providing free drainage for the urine and securing rest. When these precautions are obviously not necessary, as where the bladder is accustomed to infection, there is little backward pressure or residual urine and the patient is in condition to easily withstand the shock, the operation can be done in one stage.

The anesthetic of choice is spinal and local. The preliminary cystotomy can be done by either or both, as circumstances require. For enucleation, spinal anesthesia is generally sufficient. Babcock's solution of stovain contains 10 per cent of alcohol and is lighter in specific gravity than spinal fluid. Consequently its application can be confined with certainty to the cauda by the simple device of lowering the head and shoulders. The spinal anesthesia provides not only anesthesia, but a perfect nerve block and hence lessens the liability to shock.

Hemorrhage from the bed of the prostate, after removal, is probably best controlled by copious irrigations with hot saline solution. The temperature should be 110 deg. F. in the irrigator It causes shrinking of the cavity and hemostasis thereby.

Two fingers in the rectum should support the prostate during enucleation. At its conclusion this measure permits a thoro bimanual examination of the whole prostatic area, to make sure that no small tumors remain. Should any be permitted to remain, they endanger the clinical success of the operation, as well as encourage a hemorrhage during convalescence.

It is neither necessary nor desirable to do any suturing whatsoever at any stage of the operation. The drainage tubes can be held in place by simply compressing the edges of the skin wound with adhesive strips. At the conclusion of the enucleation, in some cases, it will be observed that the wall of the cavity from which the adenoma has been removed on the side toward the bladder, is very thick, stands up high and tends to, and apparently by lying against it could very well obstruct the outlet into the urethra. It is a good idea to bisect this and push the halves to the respective sides. Vesicle calculi are not infrequently present and should not be overlooked.

Soon after the operation and before the suprapubic wound has closed, a urethral dilator should be passed into the bladder and certified by the finger in the bladder thru the suprapubic opening. This precaution is necessary because quite often a flap of mucous membrane will take position over the urethral opening. It is necessary to assure one's self that the dilator may not have slipped behind the mucous membrane instead of into the bladder, by having the finger in the bladder, as indicated.

In the treatment of fibrosis of the vesicle neck there is little gland to remove. What there is consists of small spherules of glandular tissue, scattered thru the tough fibrous stroma. In enucleation in a case of this kind the operator simply reduces the prostate mass by the volume of tumor he removes, never very much. I believe it is best to make the initial attack on these cases with the Young's punch. By it the ventril tangent of the fibrous ring can be grasped and excised, and the vesicle outlet made sufficiently large to function well. The operation is very simple, requires at most local anesthesia and confines the patient not to exceed three or four days.

I saw a case recently, in which subsequent enucleation was called for on account of the growth of gland tissue following the punch operation. At the first examination of that case last August, we were sure we were dealing with a fibrosis and applied the punch with immediate relief. A month ago symptoms returned and examination showed plainly two lateral lobes. These were enucleated four days ago and measured approximately three and one-half and two and one-half cm. in all diameters. Cases of this kind suggest that in fibrosis of the prostate it is better first to excise and later enucleate, if the tumor obtains sufficient size to be obstructive.

Treatment of carcinoma of the prostate is probably practically limited to relief of symptoms. Cure, it appears, is unattainable. The palliative measures to be employed have for their purpose the relief of obstruction and the control of hemorrhages. Sometimes these can be attained by the punch operation and fulguration. Again, when further advanced, by a deep cautery and excision. Much relief can be obtained for the cystitis that usually accompanies by appropriate measures. The foregoing are a few notes from personal experiences, touching in the main upon controversial points of diagnosis and treatment.

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COMPLICATIONS AND MORTALITY CAUSES FOLLOWING PROSTATECTOMY*

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The average prostatic is admittedly a very poor surgical risk. He comes as a patient acutely ill, but the acute condition is superimposed upon an old pathologic process which has at times existed for years. This old process has brought with it changes involving the cardiovascular and renal systems and the impairment of these organs leads to a gradual accumulation of waste with resultant intoxication. The resistance to external infection is reduced and recuperative power is almost at a standstill.

When such an individual comes to us for relief, he is exposed to the complications incident to any surgical procedure, plus those peculiar to his particular condition. If we operate on him while in this state, we are very apt to make of a complication a mortality cause. I was particularly impressed with the nature of the complications which I met with in my own practice and the frequency of their occurrence, and was anxious to learn whether urologists among their average cases were confronted with the same problems, so I sent out a form letter to the members of the American Urological Association, and it is upon the answers to these letters as well as upon my own experience that I base this paper. I shall discuss the complications in the order of the frequency of their occurrence. Some are trivial and of short duration, while others are very grave and dangerous to the life of the patient. These are named again later as mortality causes.

Epididymitis. This is most frequently mentioned and occurs either during the period of the indwelling catheter or early in the second week after the enucleation of the gland, particularly in cases where, because of spasm of the external sphincter, it is difficult or impossible to employ thru and thru irrigation. This complication is not dangerous to life and merely prolongs the convalescence. It is no factor in the ultimate result, but I think its occurrence may be lessened by more attention to bladder irrigation after operation.

Hemorrhage is next mentioned, and may occur while the patient is upon the table and be very difficult to check, or it may come later as the result of the slipping of an inflated bag used for hemostasis, or gauze packing placed in the prostatic cavity may fail to check it. It may occur after the bag or packing have been removed, and one instance is mentioned where it came as late as the tenth day after operation. It seems to me that having to repack a prostatic cavity for hemorrhage always adds materially to the patient's risk. Hemorrhage is the underlying cause of many a death following prostatectomy which is ascribed to other causes. The patient's coagulation time should be carefully noted before operation and corrected if delayed and measures should be immediately at hand to check the flow of blood at the time of the operation. Blood transfusion may be advisable, when the patient has lost much blood while on the table, because there is always some oozing for the first five days after operation and this may otherwise be more than he can bear.

Pneumonia usually comes early and may be due at times to the chilling of the patient, while being transported from the operating room to the bed. I have had it happen as a result of the patient leaving his bed and sitting in a chair before an open window during the temporary absence of an attendant. It may be due to hypostasis. Ether may predispose to it. Its occurrence may be lessened by having the patient in better condition before operation and by the use of protective coverings directly against the chest before transportation from the operating room. Frequent changing of the patient's position will protect against hypostasis. It may be wise to fortify the heart by the use of some form of digitalis early after operation.

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Fistula, persistent for months after operation, may be due to stone, contraction of the bladder neck at the site of the scar or, as one operator reports, complete obliteration of the bladder outlet. Proper measures must be instituted to guard against stone formation. An indwelling catheter has been suggested to insure against complete closure of the bladder outlet but it seems that the early and repeated use of the steel sound following operation will be a sufficient safeguard.

Stone forms easily in alkaline urine, so it is important to keep the urine highly acid after operation. This can be done with acid sodium phosphate used in sufficient amounts. I have seen a catheter thickly encrusted with urinary salts after being in the bladder four days and it seems that some individuals are especially susceptible to the formation of vesical calculus.

Pulmonary embolus is a very distressing complication and usually results fatally. It appears so suddenly and measures for its relief are so futile that we must devote our energies to its prevention if possible. Sitting up in bed too early is said to predispose to it. I think that infection played some part in my cases, both of which terminated fatally within a very few minutes, one on the day of the operation and the other on the fourth day. Both were autopsied. Both of these had considerable bladder infection and fairly high temperatures for several weeks before operation.

Myocarditis with a failing heart we fear between the third and sixth day following operation. The pulse weakens and the blood pressure is reduced. We see cardiac complications mostly in the cases of long standing obstruction, where there is considerable myocardial degeneration. The use of digitalis on the day of the operation and for the following three or four days is our very best safeguard.

Sepsis and pyelonephritis will occur very much less frequently with longer preliminary care, and more persistent irrigation of old infected bladders before operation. The infection is usually an ascending one from the infected bladder.

Acute suppression of urine or uremia occurs at times, in spite of every precaution during preliminary care. The patient's appetite and general condition are very important guides in determining his fitness for operation and should be taken into consideration together with the blood urea and phthalein determination. Intravenous glucose or salt solution and their use by bowel immediately following operation are valuable aids in restoring urinary secretion. I have had no experience with bleeding followed by blood transfusion, but it appeals to me as a rational procedure. It might be well to type all our prostatics as a routine measure before operation, as acute suppression of urine so rapidly becomes fatal.

Cancer is mentioned as a complication, but it seems rather better to class it among the primary causes of prostatic obstruction. I had one case where the tissue remaining after enucleation of an adenoma of the prostate underwent malignant degeneration. The pathologist's report of the tissue removed was adenoma, but I think that the malignant areas may have been inadvertently overlooked but present at the time of operation.

In *phlebitis* we have a complication which is common to other surgical procedures and is the result of infection.

Contraction of the bladder neck has been mentioned under fistula and is important because it often calls for a secondary punch operation for its relief. It can usually be prevented by the early use of sounds.

Urinary incontinence is the result of injury to the external sphincter. When a large fibrous prostate, which is densely adherent to its capsule, is removed suprapubically, the trauma may be such as to include the external sphincter in the resultant scar, and there may be a nocturnal continence and a diurnal incontinence.

Abscess of the prostate may cause a condition simulating hypertrophy or we may have both conditions simultaneously.

Postoperative hernia is very apt to occur in cases draining a long time just as it is following drainage with any other surgical procedure of the abdomen. A proper belt or coaptation of the fascial margins will correct the condition.

Orchitis with sloughing of the gland occurs at times in the debilitated and is apt to be very severe and accompanied by high temperature and chills. The testicle usually sloughs away. Early opening of the abscess with heat to the affected part helps to relieve the condition.

Toxic psychosis occurs and may be very violent. I think it is uremic in origin. I had a case where the patient nearly strangled the nurse before help arrived, and a few days after the bladder had been drained he became absolutely rational.

Opening of the peritoneum during the second stage of the suprapubic operation may occur as a result of the breaking thru of the upper angle of the fistula, as the finger is introduced for the enucleation. Incision of the wound at its lower angle and careful introduction of the finger will act as a safeguard.

Acute ileus with abdominal distention may be met with. I have seen it once but failed to find its cause. It was of short duration and easily controlled.

Sloughing of the abdominal wound is sometimes distressing and is due to infection with lowered vitality.

Incomplete removal of the prostatic obstruction is of occasional occurrence and may lead to a return of the symptoms of prostatism. A small adenomatous nodule may be overlooked, or a subcervical group hypertrophy may develop, following a perineal prostatectomy.

Perineal abscess may occur with the perineal operation. I do not know of its occurrence following the suprapubic attack.

Stricture of the urethra of small calibre is rather uncommon as a complication, because stricture is seldom accompanied by prostatic hypertrophy.

Rectovesical fistula, resulting from too vigorous manipulation of the prostate during suprapubic enucleation of a fibrous gland, has occurred but it can be avoided by caution during the operation.

Cellulitis of the abdominal wall, following infection of the abdominal wound, adds much to the length of the convalescent period.

I think *shock* is of much less frequent occurrence with the two stage operation, but it is seen following all surgical procedures and is more common with prolonged operations and great loss of blood.

Syphilis and diabetes may complicate the situation and would require the same management as when accompanying other surgical conditions.

Neuritis, cerebral edema, peritonitis, pleurisy, thrombosis, parotitis, endocarditis and hemiplegia have been mentioned and also keloid of the scar. These conditions do not require special mention, as they are more commonly found associated with other surgical diseases.

When we view the mortality causes we find uremia or acute suppression of urine the most commonly mentioned. I think that more attention to preparatory treatment with longer preliminary bladder drainage will lessen the number of uremic deaths.

Hemmorrhage is next as a cause of death. There is still much dispute as to whether gauze packing or a rubber bag offers the best means of controlling bleeding. I think some cases will always be lost because of the hemorrhage accompanying the removal of a fibrous gland, where much time is necessarily consumed in the mechanical act of enucleation, so that the prostatic cavity cannot be packed at once and the bleeding stopped. The only remedy is blood transfusion in all those cases as soon as they leave the table. Deaths from hemorrhage are often ascribed to shock and other causes.

Acute cardiac dilatation. The heart muscle shows signs of impairment in most of our prostatic cases, therefore I have made it a routine to use digitalis immediately after operation, and continue its use for three or four days to anticipate a weakness of the muscle which usually presents itself on or shortly after the third day. This weakness proceeds so rapidly that digitalis is powerless to act, if withheld until the heart shows definite signs of failing, but as a prophylactic I have found nothing better.

Pneumonia comes next as a cause of death. Preliminary measures to increase the patient's resistance and careful postoperative care are our only safeguards.

Pulmonary embolus seems to be the "bete noir" of many a prostatic series which promised to reach great lengths.

Cancer continues to occupy a leading place among our causes of death, and the difficulty lies in the fact that it gives us few symptoms early in the disease, and as yet we are unable to convince men in middle life that they should have periodical rectal examinations. In fact, I think there are still many physicians who do not make it a routine to examine by rectum every man giving a history of urinary distress or frequency.

Whether shock causes as many deaths as are attributed to it or whether some of them are due to other causes as hemorrhage, myocardial degeneration, or acute suppression of urine I am unable to state.

Deaths due to myocarditis have, I think, the same underlying pathology as those ascribed to acute cardiac dilatation.

Sepsis or infection is a classification that usually includes several other groups. Pyelonephritis can be classed with it. These are cases where there is apparently an acute ascending infection of the kidney. Some of them might be saved by more rigid preliminary measures.

Mesenteric thrombosis has occurred, as has paralytic ileus. There is mention of apoplexy, peritonitis, angina pectoris, and toxic psychosis. Erysipelas seems to be prevalent in some localities and is given as a cause.

I think that sometimes it is difficult to give the exact cause of death without an autopsy, which is often impossible to obtain.

MEGACOLON*

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This being a rather unusual condition and it having been my good fortune to see two such cases have stimulated me to look up the literature and from this knowledge I have compiled the following article. Despite the fact that megacolon has engaged the earnest consideration of the medical profession for almost a century, there are still many mooted questions of momentous import.

The first article to appear on this subject was by Parry, in 1825. While there were several other articles published following this one before the splendid ones by Hirschsprung, the first of which was in 1886, this condition has largely gone by his name since. Other terms have been applied to it, such as "megacolon congenitum", (Mya), "congenital idiopathic dilatation of the colon" (Hirschsprung), "great colon" (Fordwood, Osler and Fuche).

In 1908 Finney[1] wrote a very classical article, at which time he found a bibliography of 208 articles. Dowd[2] has tabulated the articles from 1908 up to October, 1921. (I take the privilege of quoting from these articles).

There is a great deal of evidence that this disease is congenital in the majority of cases, but as yet the real cause is not known. Hirschsprung has divided these cases into two groups: (1) those occurring in infancy (true megacolon), (2) those occurring in adult life (pseudomegacolon).

Among the recent writers there is considerable diversity of opinion. Many believe that, since the process is a congenital one, it can manifest itself only in early life (true megacolon), and those cases occurring in adult life they believe to be due to an aggravated form of constipation, a coprostasia pure and simple (pseudomagacolon).

It is rather confusing from the literature to determine which cases are congenital and which are due to some mechanical or spastic obstruction. There are some who contend that the condition is always congenital, that it is only a delayed manifestation and that it has been brought on by atony of the bowel incident to the time of life.

Popper[3] believes that megacolon is exceedingly rare, if not unknown in the adult, and Ladd[4] states it is occasionally possible for a patient to reach adult life with this condition, that most of the cases reported in the adult do not give a continuous history from infancy[16]. As to the location of these dilatations there is some variance. Among Ladd's cases, for example, there was only one instance when the entire colon was involved. In three others the descending colon and sigmoid were affected, and in the fifth the rectum, sigmoid and descending colon. Puls'[5] analysis of 104 cases revealed the sigmoid alone involved in 35 per cent, the entire colon in 27 per cent, and the sigmoid either alone or with other segments in 84 per cent Mummery[6] noted that the sigmoid was chiefly affected in 80 per cent of the cases. In Hirschsprung's two original cases the sigmoid was chiefly involved. Neugebauer[7] stated that the sigmoid alone was the site of the disease in 74 out of 169 cases and Barrington-Ward[8] found all sigmoids dilated in 19 autopsies on children. Brewer[9], in writing of megocolon, states that there is chronic dilatation of the sigmoid and even of the greater part of the descending or transverse portions of the colon. Blake[10] found the upper rectum and sigmoid enormous in a woman twenty-four years old and the mesosigmoid was so long that the sigmoid loop could be lifted fourteen inches outside of the abdomen. Finney observed that in more than one-third of the cases the sigmoid alone was involved, and in practically all instances it was included.

Regarding the relative frequency with which megacolon affects the sexes, it is in the proportion of three to one in favor of the male. There seems to be some familial tendency, altho this is not marked, usually these cases being individual affairs, but there are some reports in the literature in which there has been as many as two in the same family.

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The degree of dilatation in these cases is something enormous. Finney states that the circumference of the abdomen may be greater than the height. Peacock reports a case in which the colon held sixteen litres. Graves described a colon 110 cm. long and 31 cm. in circumference. Johnson describes a colon which contained three or four quarts of feces. In Dowd's case the colon held four litres after it was removed.

It is highly possible that there is more than one etiologic factor, as no single cause thus far given can account for all cases.

The following theorems are advanced:

1. Abnormally long mesentery (Borth).
2. Congenital origin of the disease (Hirschsprung and Mya).
3. Chronic colitis (Walker and Griffith).
4. Increased length of colon with resulting hypertrophy and distension, due to gas and feces. (Mayan).
5. Mechanical obstruction (Graves).
6. Congenital aplasia of the muscular tunics of the bowel immediately above rectum (Concetti).
7. Spastic constriction of the sphincter ani, associated with fissures in anal margin (Fenwick).
8. Neuropathic dilatation and hypertrophy (Hawkins).
9. Valve formation in the intestine.
10. Lymphangiectasis as an etiologic factor (Finney).

Dowd claims there may be three causes:

1. That it is due to congenital defect in the development of the colon.
2. Due to some form of mechanical obstruction and that the colon hyperthrophies and dilates in its effort to overcome this obstruction, just as the heart hypertrophies and dilates when increased demand is made upon it.
3. That is due to spasm of the circular fibres in the lower part of the intestine and that dilatation of the colon follows this spasm, just as dilatation of the esophagus follows cardiospasm or dilatation of the stomach follows pyloraspasm.

The symptoms in infancy are delayed passing of meconium, constipation to the extreme, lasting from a few days up to weeks. Johanessen[12] reports a case which went five weeks, Roth[13] six weeks, Rolleston and Hayward[14] nine weeks and Gay[15] three months.

The abdomen is enormously distended, the individual is emaciated, of apathetic appearance with general features of autointoxication well marked, staining of the skin, foulness of breath, low blood pressure and coldness of the extremities, loss f appetite, rarely ever has pain, audible borborygmi; belly wall is thin and coils of bowel can often be seen and felt, due possibly to atrophy of muscles from pressure and mal nutrition; the skin except over the belly is loose and dry, intermittent diarrhea which relieves to a degree but abdomen never goes back to normal size and shape. These attacks of diarrhea are usually of short duration and are well tolerated, but the terminal type are continuous with increasing prostration till death.

Judd[11] claims clinically the disease is easily recognized, if patient is seen while colon is distended, but if the examination be made just after the bowels be evacuated, the condition might be taken for simple obstinate constipation. The largest circumference of abdomen is usually just above navel and distance between ensiform cartilege and navel is much lengthened.

The life expectation in these cases is very precarious. It may run a chronic course and the individual live a long life, but this is unusual. Most of these cases, according to Hirschsprung and Pfestern, succumb after a period of six to ten weeks. The disease usually makes its appearance soon after birth and has a mortality of about seventy per cent. A small percentage run along to variable periods, suffering more or less from above enumerated symptoms, resorting to enemas and all forms of cathartics which will only give a partial relief, continuing to have alternate constipation and diarrhea, usually dying of some intercurrent or terminal disease.

Diagnosis can easily be made from the above symptoms and history, verified by x-ray. Rectal examinations will not show anything except possibly a balooning of the rectal wall. Of importance too in the differential diagnosis is the observation made by Finney, that ascites does not accompany megacolon.

The treatment, whether medical or surgical, carries a large mortality and much larger medically than surgically, for at the best medically the condition can only be of temporary benefit. Medical treatment is largely symptomatic. Laxatives, special food and an occasional enema will relieve patients under this treatment. The more serious cases are to be treated by enemata and high injections. These enemata may be of soap and water, salt solution, one dram to the pint, glycerine, sweet oil, or ox gall. When the impaction does not yield, medical evacuation with the aid of a sound, spoon or the finger, is to be used.

Often relief has been gotten from high irrigation with rectal tubes introduced and kept in place for twenty-four hours. This plan has been continued for months and has been claimed to be curative. Chronic constipation can be helped by certain vegetables and mineral oil and by medicines like cascara that act on the lower bowel, and any food that has a laxative property. Butter, cream, olive oil and green vegetables should be included in the diet. Coarse food with a great deal of residue may injure the intestinal mucous membrane. Massage, abdominal exercise, electricity and gentle stimulation of the rectum to cause peristalsis should be routine methods in megacolon, when peristalsis is impaired.

The literature gives an abundance of proof that surgical treatment is more successful than medical. Neugebauer reports that medical treatment proved curative in 1.5 per cent of 133 cases. For instance, Duval gives 74 per cent mortality for medical treatment and 34 per cent for surgical. Lowenstein gives 66 per cent for medical and 48 per cent for surgical.

Ladd gives the following tabulation of 118 cases:

Treated medically	60	12	15	6	67
Treated surgically	58	41	8	3	41

Surgical treatment aims at removal of the functionless bowel and restoration of the intestinal continuity. The procedure varies according to the preference and judgment of the individual surgeon. Cecostomy is accepted by the majority of surgeons as the course to pursue during the period of acute obstruction. Following this preliminary operation, partial or total colectomy, depending upon the extent of the dilatation, is the operation of choice.

As the problem of treatment is frequently presented in the first few years of life, such heroic measures would be doomed to failure. At the first operation the ileum is divided and implanted as low down in the rectum as possible. The open pelvis of the child permits the junction to be made at a lower level than would be possible in the adult. The junction has to be made with the greatest care, as the tissues of the rectum do not lend themselves to ready manipulation and the risk of leakage and peritonitis is considerable.

This operation may give the patient relief for several months. The fluid contents of the ileum find a ready exit thru the shortened rectum and the blocking of the colon and rectum above prevent regurgitation to any harmful extent. The child's strength improves and at a favorable opportunity some months later the large bowel above the anastomosis is excised.

The operation may be a very simple one. This is especially the case, if the gut is large and is provided with a distinct mesentery and the vessels can be controlled in a series of pedicles. The operation is more difficult, if the huge size of the bowel has encroached on the mesenteric interval.

The operation leaves the patient with the ileum entering the dilated terminal portion of the rectum. It is true that this must be considered a theoretical disadvantage, but in practice the fluid contents of the small intestine do not tend to lie in the rectum to any extent, the control is good and the bowels move normally after this operation. If the feces do tend to collect, which is rare, it is an easy matter to wash out the relatively small cavity left so near the anus.

From the literature it is thoroly evident that the two or three stage operations carry the least mortality and the best results. By this I mean the removal of that portion of the large bowel which is affected, delivering it on the outside of the abdomen, closing the abdominal wall around the bowel, and then the intestine severed, the distal and proximal ends being sutured and so arranged that the spur between the double barrel gun effect may be obliterated, the bowel being closed later.

When the whole large bowel is involved, the first operation should be a dividing of the ileum, planting it low down in the rectum. This will often give the patient relief for several months. Perforated rectal tube should be inserted above the area of anastomosis and kept in position for several days; when conditions improve sufficiently the colon might be removed. It may not be amiss to implant a tube in the head of the colon at the time of ileorectostomy to relieve any back pressure and for irrigation purposes.

From my review of a great many articles on the subject there is a usual concensus of opinion that, if these cases would reach the surgeon when the manifestations of the disease are still early, many of the harassing symptoms and developing pathology would be obviated.

Case 1. B. G. Male. Age 5. I delivered by a cesarian birth for reasons of placenta previa centralis. Only child. Artificially fed.

Constipation began in very early life. At the end of the first year there was a decided pot belly, this condition slowly increasing. There were frequent attacks of gastrointestinal intoxication, associated with fever and vomiting, sometimes convulsions. Condition of nourishment fair. Child died in convulsions, hvaing been unconscious for three or four hours preceding death.

I am indebted to Dr. Earl Current for the above history, who had the child under observation off and on from his birth. I saw the case in consultation shortly before death, with Dr. Current.

Postmortem findings. I regret that it is not more in detail and complete. About normal size for age. Fairly well nourished. Very prominent abdomen. Upon opening the abdomen the large bowel occupied nearly the whole cavity, being much larger than that of an adult; was dilated in its whole length and walls thickened thruout. The sigmoid not only was enlarged and thickened but was much elongated with a long mesentery attachment, it could be laid up across the child's face without detaching. The rectum did not seem to be involved.

Case 2. This was a male, adult, whom I saw in consultation on the operating table. The large bowel filled the belly, the head of the colon occupying the whole breadth of lower abdomen with appendix located in left lower quadrant. Was unable to get a satisfactory history, as did not see patient before or since, and the history which I secured from his attending physician was rather indefinite, as regards any bearing on the subject. The appendix was removed and a fecal fistula was established in cecum. Enormous quantities of fecal matter were expelled following operation. Condition of patient some months after was reported as being quite satisfactory.

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TRACHOMA (GRANULAR CONJUNCTIVITIS, CHRONIC OPHTHALMIA) AMONG THE UTE INDIANS

F. C. Myers, M.D.
WHITEROCKS, UTAH

Genuine trachoma is a disease that but few physicians see in general practice. I did not after a practise of thirty-five years in four different states in the union. I was engaged in the United States Indian Field Service just two years ago this month on the Uintah and Ouray reservation, consisting of about 25,000 acres, with our headquarters at Fort Duchesne and Whiterocks. About 1200 Indians are scattered over the reservation within a radius of sixty miles from our headquarters. The agency and hospital is located at Fort Duchesne. I am at present at Whiterocks, where the Indian school is located and where about half of the Indians live.

Since coming here I have treated over one hundred cases of trachoma among school children, besides many of the children's parents living in this vicinity. I will give a brief history of the disease, as I find it among the Indians, and my experience in treating it here.

As is well known, trachoma is an infectious inflammation of the conjunctivia. There appears a purulent secretion, which is supposed to contain the specific or contagious element, altho the bacterial cause is uncertain. The inflammation cannot be distinguished from the catarrhal or purulent at first. In most cases granules appear soon, which are gray, translucent and roundish, like frog spawn or grains of boiled sago. Sometimes they are imbedded in the conjunctivia and show only under close examination. There is more or less photophobia, sensitiveness to light, lachrymation and visual disturbance. It is distinguished from acute blennorrhea by its chronic course. If a case is not cured early, there may be permanent imparement of the eye, distortion of lid, corneal ulcers and opacities, and finally pannus.

Etiology. Trachoma comes from infection, proceeding from another eye with the same disease, by transfer of the secretion. The name and nature of the microorganism is not known. It appears under bad hygienic conditions, where people are crowded together, as in steerage passage across the ocean, barracks, schools (Indian schools especially), asylums, lack of cleanliness, etc. It is common among Indians, the Irish and people of northern Europe. The granules and contagiousness establish the diagnosis.

Trachoma may be distinguished from follicular conjunctivitis by the following conditions and symptoms. The latter is a disease of childhood, more prevalent up to the ages of twelve and fourteen years. It is found in large institutions, where a large number of children congregate, public schools and asylums. Bad atmosphere and poor light may cause it. Poverty and insanity favor the disease.

The history is generally negative, no photophobia, lachrymation not bad, no ptosis, no redness of conjunctivia except in bad cases, no deformity of eye-lids, pannus or corneal ulcers. The only thing found on everting the lids is follicular bodies more numerous on the lower lid than on the upper. They appear in rows like a string of beads. The conjunctivia is neither thickened nor infiltrated. There is no scar tissue. The follicles never run together; they are about the size of a pin-head, pale in color and not contagious.

Treatment. The treatment varies according to the condition of the conjunctiva. First, in the acute stage before granulations appear, silver nitrate may be used, two to fifteen per cent, applied every day to two or three times a week. After granulations appear they should be pressed out with the thumb nail or the trachoma roller forceps, after which protargol or argyrol should be applied once or twice a day. Argyrol may be used in from one to two per cent solution, pro targol in from five to twenty per cent. I prefer the use of protargol to argyrol, as the latter leaves a dark stain on the eye-lids, also a stain on clothing if dropped on them; protargol does not. I have also used copper citrate, the five to ten per cent ointment, in some cases, using protargol in the morning and the copper in the evening, with good results; also the copper pencil in some cases, as indicated. I have used the compression method with the roller forceps in some cases, where granulations were extensive and which required the operation, and in a few cases have used blichloride of mercury, 1-3000 to 1-5000 solution, brushing it over the surface of the conjunctivia with a fine tooth brush.

Dr. B. M. Hawley gives an account of treating trachoma with negative pressure (Practical Medicine Series, Vol. 3, 1919). He devised an instrument consisting of a glass tube 120 mm. in length with a curved end 4x3 mm., that is applied to the tissue, there being a central bulb or chamber to hold the secretions that are drawn off, and 5 mm. back of the bulb is a small opening in the tube for the finger of the manipulator to make or break the vacuum as desired. The writer scarifies and then uses suction. He first washes lids with a solution of boric acid and wipes with a solution of bichloride of mercury, 1-5000. The author claims in the treatment of twenty-five cases by the suction method that he had good success in three months. I have never tried this method, but should think it would be good.

I have treated most of my cases, more or less for a year, with about fifty per cent of them cured, and the other cases much improved, and expect to be able to dismiss at least 90 per cent cured before I leave them. I have not been able to hold many of the old Indians who have had the disease all or most of their lives, as they will not come for regular treatment. I believe the majority of all cases could be cured, if they could have regular treatments and attention each day, which could not very well be done unless they could be induced to go to a hospital and stay there. That is a very hard thing to persuade an Indian to do, as they are very superstitious and think, if they go to "a white man's" hospital, they will die there. They say it is "kutch eye," no good.

RESUSCITATION OF ASPHYXIATED INFANTS. NEW USE FOR A POLITZER BAG

Harry Feagles, M.D.
CHEHALIS, WASH.

In Northwest Medicine, December, 1913, I reported my method of resuscitating new born babies with a catheter and politzer bag. At that time I had used the method three times successfully, and was so pleased with the results that I made a report on these cases. Since devising my method the pulmotor has been perfected and works successfully, but it is bulky and difficult to carry and, besides, costs $150. A politzer bag and a catheter can be carried in one's obstetric bag and costs only about $1.00.

I have used my method and no other since April 10, 1913, so that I feel I have had sufficient experience to be able to judge its value and recommend its use. I have used my method on all babies who do not begin to breathe independently after wiping the mucus from their mouths and giving them one or two slaps on the back, and have failed to resuscitate only once. This was a breech delivery in a home without any trained assistants. The mother was a short fat woman, third pregnancy. The baby weighed ten pounds. I inflated this baby's lungs as long as his heart kept beating which was one hour.

At one time I was rewarded with a living baby after one hour's work. He took his first breath independently one hour after delivery. At another time I tried my method on triplets, a six months' miscarriage and found that, as long as I inflated their lungs, their hearts would beat. The first heart I kept beating one half hour, the second was the same, and the third I worked on for an hour with the same result. Each one's heart stopped beating in a few seconds after I quit the air. At one time I resuscitated triplets, seven months miscarriage. One lived a day, one two days and the third three days.

My obstetetric practice is not large, but has been large enough to observe and test out the value of my method. The first baby is now ten years old and in the fourth grade. The last one is five days old and in the hospital. It required twenty minutes to resuscitate both of them. In all, I have delivered four hundred babies with only one that I failed to resuscitate. This covers a period of ten years.

To repeat my method in a few words, take a six ounce politzer bag, attach a medium size male catheter, insert the end of the catheter in one of the baby's nostrils, hold its mouth and nose shut with one hand and squeeze the bag. This will fill the lungs; press on abdomen and chest to expell the air. Keep this up about sixteen times a minute, as long as there are any heart beats.

TWIN FETI PAPYRACEI WITH THIRD LIVING CHILD

C. C. Wallin, M. D.
LEWISTON, MONT.

Mrs. J. B. P. consulted me May 1, 1921, on account of edema of the legs and shortness of breath. Last menstruation November 19, 1920. Mother of four children, ages 8, 7, 5, 5, all living.

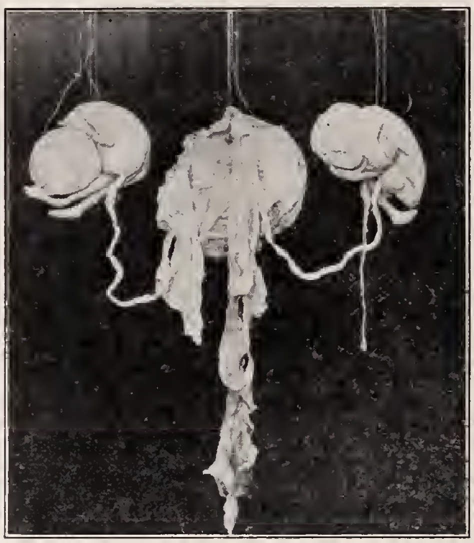
Childhood history uneventful, menstruation established at age of 15, regular 28-day type, painless. Always strong and healthy. All her labors had been terminated with instruments; why, she did not know. In the last month of her last pregnancy her urine contained a trace of albumin. Her mother was a twin and had given birth to twins. Her father died of diabetes. Her husband's health is excellent.

The patient had a fine physique and carriage. Height 6 ft., weight 238 lbs. Pulse 72, B. P. systolic 140, diastolic 100. Pulse drops two or three beats per minute at irregular intervals. Head nad chest negative. Abdomen shows enlargement of the uterus sufficient to arouse suspicion of multiple pregnancy. There was slight edema of the lower extremities, but no pitting, as well as moderate varicose veins of both legs and thighs. A catheter specimen of urine secured in the office showed a heavy albuminuria by the heat and nitric acid test.

The patient was sent directly to the hospital, placed on a milk diet and quantitative estimation of the twenty-four hour albumin output made every second day. The first specimen showed an alkaline reaction, no casts or blood cells and 4.89 gr. albumin. Total amount 3060 c.c., specific graity 1015. The last, made May 9, showed total amount 1620 c.c., specific gravity 1015, acid reaction, total albumin 1.74 grs. The patient was allowed to return to her home, having been given instructions as to diet and directed to mail in weekly specimens of urine.

She reentered the hospital the evening of August 6. A single specimen of urine taken the following morning showed 1.5 per cent albumin, no casts or blood. I saw her at 10:15 a. m. August 7. She showed marked hydramnois, apparently a small child in vertex presentation. Fetal heart distinct. Pelvic diameters ample.

The cervix was partly taken up and admitted one finger. A 7 p. m. she was having some pain and the cervix was dilated one inch. To the right, and in advance of the amniotic sac and the fetal head, could be palpated a flattened mass, circular and apparently two and one-half inches in diameter, that gave the impression of being macerated bones. As the pains seemed to be increasing, the patient was taken to the delivery room at 7:30. At 8.30 there was thre inches dilatation and the fore-lying macerated bones were found to be the head of a fetus papyraceus. This was extracted and the cord, the color and size of a buckskin shoe thong, was cut and allowed to remain.



Pains continued of moderate severity until 9:30 when, there being approximately full dilatation, the membranes were ruptured and the head came down in the R. O. A. position. Propulsive pains were weak and the patient rapidly losing her courage. There was no response to pituitrin and at 10:30 the pains ceased, with the head in the median plane. Forceps were applied under light chloroform anesthesia and a six and one-half pound, living child, extracted. The cord had scarcely been clamped and secured, when a sharp hemorrhage from the uterus begun. With one hand on the abdomen over the fundus, the other was thrust into the uterus and the placenta extracted, the hemorrhage being thus promptly, not completely controlled.

The hand was again introduced and the placenta of the fetus papyraceus was found on the left side of the uterus, just below the entrance of the tube. This was removed and with it a second fetus papyraceus, in a separate sac, flattened and apparently unruptured. Hemorrhage ceased and after a hypodermic of ergot the mother was returned to her room in good condition.

Her convalesvence was uneventful, her temperature at no time going above 98.6 degrees. At this date, January 8, 1923, both mother and child are doing nicely.

NORTHWEST MEDICINE
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EDITORIAL

TULARAEMIA. A NEW DISEASE FROM THE WEST

A group of workers in the U.S. Public Health Service have identified and described a new specific infectious disease, which has been designated tularaemia, due to *Bacterium tularense,* transmitted from rodents to man by the bite of an infected blood-sucking insect, or by the handling of infected rodents by market men or laboratory workers. A full description of the disease and its bacteriology has been published in a bulletin of the U.S. Public Health Service*. The disease has been thoroly studied by Francis, who first isolated the germ in his investigations in Utah. The disease originates in jack rabbits who have died in epidemics from effects of the disease. The chief source of infection is in these sick and dying animals. Foci have also been found in California and Indiana. By laboratory experimentation the disease has been transmitted to prairie dogs, guinea pigs and white mice, by two species of biting flies, two of fleas, two of lice and the common bedbug, which after sucking the blood of the infected animal have conveyed it by biting the above mentioned animals.

The chief interest in this disease is its transmissibility to man. It is a disease of the rural population, attacking persons who work in the field. Some two dozen cases are reported to have occurred in Millard County, Utah, in each of the years from 1917 to 1920, with an occasional fatality. All six of the laboratory workers directing the experimental work on animals contracted the disease, two in the field work in Utah and the other four in the Hygienic Laboratory in Washington. The disease is commonly transmitted by a fly-bite on an exposed surface of the body, with sudden onset, accompanied by pains and fever. The latter is of a remittent character, of about three to six weeks duration, with slow convalescence over two or three months. Lymphadenitis arises in the neighborhood of the fly-bite, commonly accompanied by suppuration. The infecting organism is recoverable from the site of suppuration as well as from the blood of the patient.

The varieties of rodents susceptible to the disease, and the number of insects capable of transmitting it are suggestive of its possible prevalence over an extended area in the West. Therefore, in localities where these conditions are possible, this is a febrile condition which must be kept in mind as a possible explanation of some cases of uncertain diagnosis.

A MENACE TO PUBLIC HEALTH

Undaunted by the six-to-one vote cast against their measure to abolish animal experimentation in Colorado last fall, and the stinging rebuke accorded them at the polls in California, the antivivisectionists succeeded in getting introduced into Congress, during the last session, a measure that purposes to "forbid the employment of noxious substances upon the bodies of domestic animals" by any "officer, enlisted man or civilian employe of the Army or Navy, in the pursuit of any research, investigation or test of the efficiency of any gas, liquid, powder or other noxious substance." This bill was referred to the Committee on Military Affairs, from whence it had not emerged when Congress adjourned. This fate was a keen disappointment to those who favored it as an entering wedge in an attempt to inhibit scientific research and biologic experimentation. It seems certain that the Bill will be reintroduced when Congress next convenes. Should it be enacted into law, a frightful, if not fatal, blow will have been dealt medical research, and the inevitable toll of human lives will not be long delayed. Its passage, however, seems contrary to any reasonable expectation.

Unhappily for the state of Washington, upon it falls the opprobrium of having elected to Congress the sponsor of this vicious measure, Albert Johnson, of Hoquiam. Mr. Johnson's various activities include that of publishing one of Gray's Harbor's newspapers. That this paper is unfriendly to scientific medicine, that its columns are closed to health articles and discussions, are matters of general knowledge to those interested in this subject. Mr. Johnson's name also appears on the literature of the antivivisection society of this state as one of its vice-presidents; and as such he is, of course, concerned in furthering its program and supporting its policy wherever possible.

It must not be forgotten that this society of sentimentalists "in the interests of humanity" bitterly fought for the retention of Referendum 13, when the matter was referred to the voters last fall, joining hands with the eddyites and the freak medical cults to make the world safe for guinea-pigs. The society stated that it favored the referred measure "from the angle of cruelty in that serums are obtained thru vivisection." As the well-known Ernest Harold Baynes, a true lover of animals, so aptly states, "The whole question is one of proportion." In the meantime, this society of Mr. Johnson's adoption and affiliation is assiduously distributing thruout the state thousands of pamphlets, abounding in misstatements, evasions, evil insinuations and absurd denunciations of such world-benefactors as Koch, Pasteur and Lister, branding these great leaders of modern medicine as men who have "not only hindered true progress but covered the profession with ridicule."

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* U.S. Public Health Service, Hygienic Laboratory. Bulletin No. 130.

Fortunately, the voters of Washington will soon have an opportunity to rectify at the polls their political mistake, and to demonstrate to Mr. Johnson their disapproval of his breach of trust. Certainly they will not permit to pass unreproached his attempt to make our fighting men victims of misguided theories. It will be the duty and pleasure of the medical men of Washington, who recognize their moral obligation, to take an active part in any political question that affects public health, to lend every assistance in administering the hoped-for rebuff. A man who has thus demonstrated himself to be a menace to the public health should not continue to function as a national legislator. His proper sphere of activity is that of a private citizen.

RESULTS OF MEDICAL LEGISLATION IN IDAHO

The seventeenth session of the Idaho Legislature adjourned March 9 after a very stormy session. It was featured by more personalities, backbiting and petty issues than any other held in years. The sentiment as a whole was friendly toward scientific medicine. There was a general attitude to kill off all regulatory measures, and this reaction assisted in defeating both the naturopathic and drugless healers license bills. However, if the profession had tried to put thru a new license law or amended the medical law, they would have certainly run counter to this feeling. All vicious legislation inimical to the profession and lowering of the present public health standards were defeated. Some of the most vicious measures proposed were not introduced, as the proponents failed to find friends among the legislators to introduce them. One in particular was the osteopathic surgery and medicine bill. About five weeks work among the legislators was put in by the advocates of this measure. This attitude among the legislators was brought about thru organization.

Several constructive measures were proposed and two much needed laws were passed by the legislature and approved by the Governor. Senate Bill 129 provides that no person can practice any system or mode of treating the sick without a license to perform or prescribe such service. This bill was bitterly opposed by the osteopaths, their main argument being that it would not allow them to use the notorious Abrams treatment. They had several of their patients lobbying against the bill. They admitted that Abrams is not a part of osteopathy. Regardless of the bitter fight, it passed the Senate 32 to 9 and the House 58 to 4. Practically their entire state society then met in Boise, appeared before the Governor with their attorneys, asking him to veto the bill. Over their powerful lobby he signed it. The main purpose of the bill is to stop the drugless cults from practicing without a license. There has been no law in Idaho since the Supreme Court, in 1916, ruled that "if they did not call themselves physicians and surgeons or do the things that are commonly done by a physician and surgeon, they would not come under the Medical Practice Act." As a consequence there are two hundred of these non-licensed fakers preying upon the people of Idaho. This law will go into effect May 8. This deplorable condition has been remedied by the passage of this law.

House Bill 153, by Gillis, is another constructive measure. It exempts physicians and surgeons from the necessity of obtaining an optometrist's license. The existing law positively states that no one can fit or adapt lenses without first having secured an optometrist's certificate. This provision was placed in the optometry law by the legislature in 1919. The present bill, which passed the House unanimously and the Senate by a vote of 24 to 18 and has been signed by the Governor, exempts physicians and surgeons from this vicious provision.

Senate Bill 278, by Vaillancourt, provided a new narcotic law to correspond to the Harrison Narcotic Act. The present narcotic law is unenforceable, as it is in direct conflict with the Federal law. It failed to pass by a vote of 20 to 21. This bill in no uncertain terms provided that only M.D.'s could prescribe or use narcotics. A powerful lobby of the cults succeeded in causing one of the most acrimonious debates that took place in this session of the legislature. The lines of demarcation were clear. All who voted against the bill stated they believed we should have a law but they believed that the osteopaths and chiropractors should be allowed to use and prescribe. Those holding this view and voting against the bill were Amonson, Boughton, Clapp, Cowles, Disney, Graham, Huffman, Keith Kirkpatrick, Lau, Lewis, McMurray, Pollard, Reed, Relberg, Rigney, Sonner, Transtrum, Van Hoesen, Wood, Wurtz. It will be well to remember the names of these legislators.

Another very bitter fight took place over the repealing of the law abolishing the tuberculosis commission. This bill passed both houses by a small majority and was signed by the Governor. The arguments used in abolishing the commission was that Idaho did not need two T.B. hospitals. After this repealing bill was passed, two other bills were introduced, one in the Senate and one in the House. They provided for the erection of one hospital, but both bills were defeated by small majorities.

Senate Bill 205 by Wurtz, of Canyon County, provided for the establishment of a naturopathic license board. It also provided that they could quarantine and sign death certificates. It failed to pass. Senate Bill 234, also by Wurtz, provided a drugless healers' license board of five members. It provided for the licensing of every cult in existence or to be created in the future, also subjected them to all of our public health regulations. It was never passed. As a whole the advocates of better health and scientific medicine were treated better by this legislature than any held in the last fifteen years. All proposed pernicious legislation failed of introduction or was defeated, while two constructive measures became laws. These were badly needed. The League for Conservation of Public Health exerted its influence in a marked degree and had the satisfaction of being recognized as a real factor in procedures in Idaho.

PLANS FOR THE JUNE SEATTLE MEETING

The committee in charge of the next meeting of the Pacific Northwest Medical Association in Seattle, June 19-21, is reporting material progress in the arrangement of the program. One of the most successful features of last year's Spokane meeting, the public sessions, will be used again, held under the auspices of the Red Cross. Dr. H. Gideon Wells, who was with the Red Cross Commission in Roumania, will deliver an address, to which both the public and physicians will be admitted, on "Roumania and Its People, Their Part in the World War, and the Work of the American Red Cross with Them." The American public probably knows less about Roumania and the part it played in the war, and the work that America did there, than any other feature of the entire war. This will afford the public and the profession an opportunity to gain first hand information in regard to the interesting field of war work. Dr. Wells is thoroly familiar with it, and has many lantern slides to illustrate his lectures. Dr. Francis W. Peabody will also deliver a lecture for the public on "The Public and the General Practitioner." The business of the general practitioner in a community is one of increasing importance, and the problem of having a first class practitioner is of vital importance to the general public. Dr. Peabody will discuss problems of importance. Drs. Channing Frothingham and E. A. Graham will also deliver lectures for the public, but have not yet announced their subjects.

The committee reports the addition to the program of Dr. J. B. Collip, Professor of Biochemistry, University of Alberta. He was associated with Drs. Banting and Best in much of their work in the preparation of insulin and in placing it on the basis, whereby it becomes a valuable therapeutic agent in the treatment of diabetes. Dr. Albert H. Byfield, Professor of Pediatrics in the College of Medicine, University of Iowa, has been added to the program. He will present two papers, the first on "The Nutritional Viewpoint in the Feeding of Infants and Children," and the second on "Systematic Manifestations of Focal Infection in Childhood." Dr. Byfield is a splendid medical teacher and a valuable addition to the program.

Dr. H. G. Wells has announced as the subject of his three lectures a complete review of the cancer problem. His "punch" as a medical teacher is well known. His choice of this subject for his entire series makes his coming especially attractive. Dr. George E. Shambaugh presents three subjects for his lectures, "Clinical Problems in the Handling of Cases of Chronic Suppurative Otitis Media," "Structure and Function of the Acoustic Labyrinth" and "The Structure and Function of the End Organs of the Semicircular Canals and Vestibule." Dr. Walter Timme, of New York, has chosen for his subject "The Relation of Neuropsychiatric States to Early Status Thymicolymphaticus," with lantern slide illustrations. Dr. E. A. Graham, Professor of Surgery, Washington University, in association with Dr. Duff S. Allen, will offer a splendid bit of research in their paper on "Intracardiac Surgery."

The program appears to be the very best offered in the country this year. It is rich in fundamental subjects, in which so many medical programs are lacking; contains much practical material, and is well rounded out in every part. The arrangement of fundamental subjects in joint meetings makes it possible for everyone to benefit by these. The sections have been so arranged that the conflicts will be minimized. The local arrangements, having the headquarters and chief meeting places all within a radius of a few blocks, makes for a most successful outcome in association with the program which was published last month. The plans for the trip to San Francisco following the meeting are not yet worked out, but some arrangements will be made, whereby all the men who care to go to San Francisco will leave Seattle in a body, either by special train or boat.

THE UNIVERSITY EXTENSION COURSE

Physicians of Washington have learned to realize that the Graduate Medical Lectures, to be delivered at Seattle the third week of July, do not comprise a medical meeting but constitute a postgraduate course. Out-of-town men are already registering more generally than any previous year at this time. This year the lectures on surgery, general medicine, experimental medicine and dermatology will be so coordinated as to give time for clinics, for which plans are being made by the local profession. It is expected that both surgical and medical clinics will be held at various hospitals for the benefit of visitors.

Arrangements have been made for committees to be in charge of the entertainment during that week. Rush and Pennsylvania alumni will have the entertainment of the lecturers one evening, while the other alumni associations will plan for a reunion dinner at the same time. Another evening will be given to the banquet at the University and a third to the smoker by the King County Medical Society. Attention of doctors in all parts of the state is called to these lectures so that they may arrange to spend part of their vacation in Seattle.

CLINICS FOR THE SAN FRANCISCO MEETING

A large number of features are being arranged for the June meeting of the American Medical Association at San Francisco. In addition to the program of the meeting itself and the wonderful attractions available in many parts of California, arrangements have been made for two series of clinics. The first is designated the Convention Diagnosis Clinic, periods to be held in a certain number of cooperating hospitals in San Francisco and Oakland, from 10 a.m. to 1 p.m., on Monday and Tuesday, June 25 and 26. On Monday and Tuesday the following week, July 2 and 3, in the cooperating hospitals of Los Angeles and other cities of California, will be a Postconvention Diagnostic Clinic period. These clinic periods in each hospital will be divided into three clinics of one hour each. One clinic will be conducted by a member of the Medical Society of the State of California, one by an invited Fellow of the A. M. A., and one will be a combination clinic given by a California physician and a visiting Fellow.

PACIFIC COAST ASSOCIATION OF ANESTHETISTS

This organization will hold its annual meeting at San Francisco, June 22-26, in connection with the meeting of the A.M.A. and the Section of Anesthesiology of the Medical Society of the State of California. An interesting program of papers has been published. Physicians of the Northwest who are especially interested in the subject of anesthesia are invited to be present and get the benefit of this meeting. The sessions of the association and its headquarters will be the Hotel Stewart.

AMERICAN PROCTOLOGIC SOCIETY

This society will hold its twenty-four annual meeting at Los Angeles, June 22-23, at Hotel Alexandra. Clinics will be at Los Angeles County Hospital. Papers will be presented by leading proctologists on a variety of diseases of the rectum.

MEDICAL NOTES

NEW ADVERTISEMENTS

Attention is called to the following new advertisers appearing in this issue. Scenic Hot Springs Hotel (page 151) is the leading pleasure and health resort in the Cascade mountains. The merits of Holstein Milk are presented (page 12). Dr. J. H. Snively (page 5) offers x-ray diagnosis and therapy. Hanovia Co. (page 10) presents Alpine Sun and Kromayer Lamps. Dennos Food (page 5) is suitable for adults and babies.

INFORMATION ON HYDATIDIFORM MOLE WANTED

A further study of hydatidiform mole has been undertaken at the Chicago Lying-in Hospital and Dispensery, especially in regard to the frequency of malignancy following this condition. An attempt is being made to collect case reports from outside physicians. Cases reported by physicians will be given due credit in any literature published. Address communications to Robert B. Kennedy, M.D., Chicago Lying-in-Hospital, Chicago, Ill.

NATIONAL BOARD OF MEDICAL EXAMINERS

The next examination will be held by this board June 25-29 and Sept. 24-28. Applications for examinations must be made before May 15. Further information can be obtained from the secretary, Dr. J. S. Rodman, 1310 Medical Arts Bldg., Philadelphia, Pa.

OREGON

Hospital Closed. The women's detention home in Portland, known as "The Cedars," has been closed, owing to the failure of the legislature to provide city. The property consists of thirty-two acres and buildings, on which the city has spent $30,000. The future disposal of the institution is uncertain. The city has offered to turn it over to the government to be used as a tuberculosis hospital for ex-service men.

Addition for Hospital. The executive board of the Corvallis General Hospital has decided to add a wing to the institution. It will be three stories high, one hundred five feet long, with accommodations for twenty-five patients, making a total capacity for more than fifty. The estimated cost will be $25,000.

The Sterilization Law. The recent legislative session passed a law for the sterilization of habitual criminals, the insane and feeble-minded, which it is said will withstand Supreme Court decisions. Under the old law one hundred and twenty patients were sterilized, when it was suspended by a State Supreme Court decision. The new law will go into effect in May, when a large number of cases will be considered for this treatment.

Central Willamette Medical Society held its monthly meeting at Albany, March 1. Nineteen physicians were present. Papers were read by Drs. G. E. Riggs of Albany and L. F. Griffith of Salem. A banquet followed the scientific session.

Medical Officers Wanted. According to an announcement of the Surgeon General of the U.S. Army, an examination will be held at Vancouver Barracks, July 16-20 for appointment of first lieutenant of the Medical Corps of the regular army. Applicant must be between 22 and 31 years of age. Additional information is obtainable from the Surgeon General of the Army, Washington, D.C.

Returned from Europe. Dr. I. E. Gaston, of Portland, has returned from six months' study in Vienna, Paris and London. He reports an improvement in opportunities for study in Vienna. A reorganization of the clinics brought about a standardization of fees and the elimination of competitive bidding for work. In spite of the bad financial conditions he reports the postgraduate clinics as carying on satisfactorily.

Honored by France. Dr. Frank Mount, of Oregon City, has recently received the French Medaille d' Honneur des Epidemies, for bravery during the World War. He was Lt.-Col. of the 91st division.

Dr. I. E. Barrett, recently of Creston, Wash., has moved to Woodburn.

Dr. L. S. Kent, who formerly practiced in Harrisburg, has located at Eugene.

WASHINGTON

Dinner for Dr. Grenfell. The physicians of Tacoma gave a complimentary dinner to Dr. Wilfred Grenfell, the noted physican to Labrador, on March 27. He gave an interesting illustrated address on his work along the Labrador coast.

Medical Banquet. King County Medical Society held its annual banquet at College Club, Seattle, March 24, with attendance of more than two hundred. Dr. Grenfell, of Labrador, gave a short address on his work. Judge S. J. Chadwick discussed socialization of medicine. Dean S. I. Miller, of University of Wshington, gave an address. The fun of the evening centered about a parody on Abrams and his oscilloclast, in which several members acted a part.

New Hospital Completed. The new Deaconess Hospital, at Wenatchee, has been completed and is open for the reception of patients. It is a three story building, constructed of concrete and steel, built at a cost of $125,000. It contains fifty beds but can accommodate seventy patients if needed. The old buildings adjacent to the new one will be used as a residence for the hospital staff and for class rooms for the training school for nurses.

Headquarters for Child Bureau. Since the legislature voted to accept the government proposal, under the Sheppard-Towner infant aid bill, the headquarters for the state bureau of child hygiene will be established in Seattle, under the state board of health. The bureau will direct the work of educational health centers thruout the state.

Stevens County Medical Society held its annual banquet at Colville, March 7. The regular meeting of the society was held subsequently. Dr. R. F. E. Stier, of Spokane, read a paper on the cause and treatment of seasonal hay fever, illustrated with lantern slides. Members were present from a large number of towns in the county.

Health League to Enlarge. Secretary R. O. Jones, of Washington Public Health League, is conducting a campaign for increased memberhip. He is visiting the county medical societies in the interest of the league. It is expected to build up a membership of 8,000, including dentists, nurses, club women and others.

Returned from Europe. Dr. William O'Shea, of Spokane, has returned home after devoting more than a year in study in Europe. He spent the time in Vienna, Paris and Glasgow.

Dr. L. F. Wagner, of Harrington, has been appointed health officer in place of Dr. C. M. Chambliss, who left the city some time ago.

Dr. D. M. Strange, of Minnesota, has moved to Mt. Vernon and occupied the office of the late Dr. R. J. Cassel.

IDAHO

Refuses to Pay License. The Supreme Court has decided in favor of Dr. Parley Nelson, of Rexford, who was prosecuted for failure to pay a license for the practice of his profession. When the doctor refused to pay the license tax he was fined in the police court for violation of the ordinance. The District Court of Madison County reversed this action and the City of Rexburg appealed to the Supreme Court. This decision renders cities powerless to tax business.

Nez Perce and Asotin Counties Medical Society held its meeting March 19, at Lewiston. This combined society has been organized about a year. Dr. John M. Alley, of Lewiston, acted as toastmaster. The members' wives were in attendance. There was a musical program in addition.

Dr. Otis Platt, who has recently practiced at North Platt, Nebr., has located for practice at St. Maries.

Dr. George Pearn, formerly of Coffeeville, Kan., has located for practice at Jarbridge.

OBITUARIES

Dr. J. A. Tozer, of Everett, Wash., died February 28, from disease of the heart. He was 63 years of age, born in London, where he obtained his medical education. He moved to Canada and served as surgeon during the construction of the Canadian Pacific Railroad. Later he was surgeon for the Great Northern road during its construction. He moved to Everett in 1900 and went into the drug business. He was state oil inspector under Governor Hay.

Dr. Charles G. Willson died at Spokane, Wash., March 7, from Bright's disease. He was 63 years of age, born in Michigan. He graduated from the Milwaukee College of Physicians and Surgeons and practiced for ten years in Milwaukee. Later he practiced for fifteen years in Chicago. He came to Spokane four years ago for a period and returned there to live last summer.

Dr. George F. Koehler, of Portland, Ore., died March 11, following an attack of apoplexy. He was 54 years of age, born in Portland, son of the late Dr. William Koehler. He graduated from the College of Physicians and Surgeons of Columbia University at New York and studied later at Munich. He began practice in Portland in 1903. He was a member of the faculty of the University of Oregon Medical School. He was major in the Oregon National Guard. He had a large circle of friends in his native city and was one of the most respected and trusted of its physicians.

Dr. Thomas W. Sloan, of Seattle, died at his home at Bellevue, Wash., March 16. He was 74 years of age, born in Cleveland, Tenn. He settled in Seattle in 1888, following his graduation from medical school. He was one of the oldest members of the King County Medical Society. He was a man of genial disposition and well known to the older residents of the city.

REPORTS OF SOCIETY MEETINGS

OREGON

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., George Parrish; Secty., H. C. Beau.

Regular meeting of the Portland City & County Medical Society was held March 21, at the Portland Hotel, the President, Dr. George Parrish, presiding. Minutes of the previous meeting were read and approved.

The following men were elected to membership: Dr. A. W. Seibert, Barnes Medical College, St. Louis; Dr. Edward Baker, University of Kansas City; Dr. E. J. Burnett, University of Kansas City; Dr. C. G. Benedict, University of Illinois; Dr. M. B. Taylor, University of Louisville, Kentucky.

Dr. A. C. Smith reported in detail the physicians and dentists building plan, stating that it could be built for the various sums mentioned and action must be concerted and in the near future in order to obtain results. It was voted that the next regular meeting be devoted entirely to this subject and that the Dental Society be invited to be present.

Dr. H. W. Howard reported a case of death of a syphilitic patient from a severe form of anemia, in spite of numerous intravenous medications. He brought out the importance of complete and repeated blood examinations both before and during treatment.

Dr. L. Kingery held a very interesting clinic on Dermatologic Cases, presenting a case of epithelioma with its differential diagnosis, a case of tuberculide in a young boy of eight years of age, and one of leprosy that had showed marked improvement under treatment of chalamoogra oil.

Dr. C. U. Moore read a paper on "Fundamental portance of a baby receiving mother's milk up to the age of nine months and the reduction of insanity and deaths by this method. With lantern slides he illustrated the proper way of completely emptying the lactating breasts.

Dr. C. E. Sears presented a case of "Erythema Induratum."

WASHINGTON

CLALLAM COUNTY MEDICAL SOCIETY

Pres., D. E. McGillivray; Secty., W. H. Taylor

The regular meeting of Clallam County Society was held at Port Angeles, Wash., March 21. The following officers were elected for the ensuing year: President, Walter J. Taylor, Port Angeles; Vice-President, Paul Moore, Sequim; Secretary, Will H. Taylor, Port Angeles. Delegate to State Medical Association, F. T. Hyde, Port Angeles.

Dr. Walter J. Taylor read a paper on "Fractures of the Leg,' illustrated by radiograms.

KING COUNTY MEDICAL SOCIETY

Pres., C. E. Hagyard; Secty., R. F. Hain.

The General Meeting of King County Medical Society was called to order by the President, Dr. C. E. Hagyard, at 8.15 p.m., in the Public Safety Building, Seattle, March 5, 1923, Fifty members being present. Minutes of the previous meeting were approved as read. Announcement was made that the annual banquet had been postponed to March 24.

Mr. Logsden gave a talk on the Seattle Health Exposition, which movement was endorsed by Dr. H. M. Read. It was voted that a committee be appointed to represent the medical profession in this project.

Mr. A. P. Jameson, Assistant Professor Zoology, University of Washington, read a paper on "The Pathogenic Protozoa." He stated that seventeen protozoa have been discovered in the intestinal tract of man, two of which are pathogenic, entameba histolytica and balitidium coli. The paper discussed the former, describing its life cycle, the pathology produced on the intestine, clinical symptoms and its distribution. The paper was discussed by Drs. G. A. Dowling, C. E. Hagyard, A. C. Crookall, L. H. Jacobson and B. T. King.

The proposed amendment to the By-Laws was adopted.

After discussing the recommendation of the Board of Trustees, it was voted that the society disapproves of advertising in lay publications.

The Medical Section of the society met at 8 p.m. with Dr. A. R. Robertson in the chair.

Dr. Philip Schonwald read a paper on "Institutional Care of Pulmonary Tuberculosis." Organized warfare against tuberculosis dates from the time when sanatorium first demonstrated its efficiency. Five reasons for its usefulness were emphasized: Change of environment, with the separation of the patient from the anxieties of business and home, isolation for protection of others, better opportunities for diagnosis, facilities for employment of technical therapeutic measures, education of the patient in prophylaxis. The paper was discussed by Drs. W. S. Griswold, C. R. Castlen, J. S. Lundy.

Dr. C. R. Castlen read a paper, "The Public Sanatorium Care of Pulmonary Tuberculosis," as illustrated by Firland Sanatorium. He advocated a special institution for advanced cases. The paper was discussed by Dr. J. E. Nelson.

The regular meeting of Specialists' Section of the society was held March 26, with Dr. J. I. Durand in the chair.

The first paper was read by Dr. Faris Blair on "The Roentgenogram as an Aid to Diagnosis in Conditions of the Accessory Nasal Sinuses." After describing the anatomy of the sinuses, he mentioned normal variations and their appearance on the x-ray plate. In some case the cavity may be so completely filled with pus or neoplasm as to entirely blot out the normal shadow. The x-ray should be used only as an aid and too definite statements as to the condition present from it alone should not be made. Dr. H. L. Moon discussed the value of the x-ray in diagnosing sinus conditions in children.

The second paper was by Dr. James E. Hunter on "Constipation in Its Relation to the Specialties." A review of the normal physiology of digestion was given. Types of constipation were classified as atonic and spastic. The atonic is relieved by ordinary catharsis. The spastic type includes constipation following inflammatory conditions, the neurotic person, glandular cases and misuse of cathartics.

In discussion C. E. Watts stated autointoxication is more likely to occur in a diarrhea than in chronic constipation, ordinarily due to distention of the rectum. C. E. Hagyard said a number of spastic cases are due to inflammation of the mucosa with ulceration present, in which ordinary catharsis is extremely harmful. M. F. Dwyer stated the barium enema is of value but the barium meal gives little information. A. Crokall mentioned the importance of forming correct habits. Discussion was continued by J. H. Snively and J. I. Durand.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., C. M. Doland; Secty., C. F. Eikenbury.

The regular meeting of the Spokane County Medical Society was held in the Assembly Room of the Old National Bank Building, Spokane, Wash., March 22.

A most interesting talk was given by Mr. Jones of the Public Health League. Following this, there was a talk by Dr. Conway, of Cheney, demonstrating a new instrument for the control of hemorrhage following tonsil operations.

Dr. Frederick Epplen presented a case of very extensive nerve disturbance in both arms, as a result of pressure in the cervical region from a hypertrophic arthritis.

Dr. Mitchell Langworthy was to have read a paper on the treatment of the chronic form of osteomyelitis, but owing to the lateness of the hour this was deferred till the first meeting in April.

IDAHO

SOUTH SIDE MEDICAL SOCIETY

President, J. H. Cromwell; Secretary, J. N. Davis.

South Side Medical Society held its regular meeting at Perrine Hotel, Twin Falls, March 13. This society embraces the following counties: Minidoka, Power, Twin Falls, Cassia, Jerome, Lincoln, Gooding, Blaine, Camas.

Dr. F. M. Sprague, of Pocatello, read a paper on "Infant Nutrition." The paper elicited a general discussion. The meeting was followed by a dinner.

DEPARTMENT OF HOSPITAL STANDARDIZATION

Edited by George W. Swift, M.D.

In our last issue, under the discussion of "history taking," a statement appeared, in which the impression might have been created that was far from what was intended. It was as follows: "It is well for the interne, however, to fill this out completely in every case, because he will gain a better insight into the particular patient whom he has never seen before, than would the family doctor who has known this person for many years and treated him for all his illnesses." From Idaho comes a prompt criticism which was justly made. The intent of the sentence was that the interne can gain a better insight into the individual case after having taken a careful history and made a complete physical examination. The family physician, having knowledge of previous illnesses, would not necessarily gain more knowledge by writing down of the same.

Teaching of internes is one of the duties of the entire profession. We are in a measure repaying those who were our teachers when we teach he internes of today, who are the general practitioners of tomorrow. To make a broader general practitioner is to develop a broader profession. To neglect the internes or to permit them to leave our hospitals without proper training is a reflection on the staff of an institution. A patient seldom thinks less of his or her physician when the latter demonstrates the case to an interne. Contrarily, they usually have a higher opinion of the physician who can thus demonstrate a case. Whenever the staff of a hospital fails in its teaching of the interne, one usually finds the individual members of the staff have not been properly informed as to his needs. Few physicians of today are unable to teach the interne; the great majority can and do give valuable information but the interne feels that he has received superior teaching in his college course. It is the purpose of the organized staff to teach the interne not, perhaps, the science but rather the art of modern medicine. This he does not get in the college course of today.

THE APPLICATION CARD FOR THE ATTENDING STAFF

One of the rules of hospital standardization, as promulgated by the American College of Surgeons, is that every member of the attending staff shall sign an application card which, in addition to giving his name, address, society membership, includes the signing of a pledge that will not practice the secret division of fees. This is one of the primary tenets of the American College of Surgeons and, in order to obliterate this practice among physicians and surgeons, they have adopted this pledge in their program for hospital standardization and they deem it of such importance as to make it a primary requisite. The officers of the College early realized that they would never be able to curb this practice, unless every hospital in the country got behind the movement.

It might be well at this time to ask what is "secret fee splitting" and wherein lies the damage to the patient, the profession or the hospital. Secret division of fees is commonly accepted to mean the division of an operative fee, unbeknown to the patient, by the surgeon and the physician who refers the case to the surgeon. In other words, the surgeon charges $250 for an appendectomy, while the family physician states to the patient that he will not charge anything for his services, knowing that the surgeon will compensate him for his services with a check for from $100 to $200. Another method is for the surgeon to perform operations upon the patients of a doctor and permit the doctor to charge any fee he desires and remit to the surgeon a set fee ($100 for a major, $25 for a minor operation). The patient pays his family doctor the entire amount. In this instance the family doctor explains that the surgeon does these operations for him at a set price and that the patient is obtaining his services at a lower price than he would have to pay if the patient went direct to the surgeon. What other alluring propositions are made to the patient is not known. Suffice to say that this type of fee splitting is one of the commonest thruout the entire country. Another method of fee splitting is that in vogue among ophthalmologists, orthopedic surgeons and general physicians who accept a rebate from either optical houses, mechanical appliance concerns or druggists.

The American College of Surgeons considers all of these different forms as constituting the general term "fee splitting." All Fellows of the College have signed their pledge that they will not practice the same. Hospitals are only interested in the first two methods. Whether or not a patient suffers in the least by the secret division of fees will never be settled by the American College of Surgeons or any other organization, so long as men are practicing medicine. The rabid opponents of fee splitting can see nothing but harm in the system, while those who insist that fee splitting is justified, whether secret or with the knowledge of the patient, have a good many arguments on their side, sufficient so that they, at least, cannot be changed in their opinion.

The solution of the problem lies in the division of fees with the consent of the patient. When the surgeon begins to realize that the physician should have a greater compensation for the diagnosis of a case and for having persuaded the patient of the importance of an operation and accompanied him to the hospital, and when the physician, on the other hand, realizes that the surgeon in the end must assume the greater responsibility for the human life, then a common ground can be found upon which both the physician and surgeon can agree. That common ground, in all probability, will be a division of the fee in about the proportion of two to one. As a surgeon becomes better known to the public as a surgeon he will come less and less in contact with the problem of division of fees. So with the internist who becomes more popular as a diagnostician and internist; he can command larger fees and will pay less attention to "division of fees." The problem is one which concerns the general practitioner and the surgeon who is on the up-grade of professional success.

SURGERY OF THE FUTURE

This whole problem of hospital standardization is a complex one. We have to consider the hospital standpoint. We are demanding more and more of the hospital but are not providing for the additional revenue which must be obtained in order to meet these demands. We are demanding from the general practitioner who has a case in the hospital certain definite things; so also do we demand definite things from the surgeon.

Of all these three the hospital and its revenue is perhaps the most pressing. The public will not pay very much more for increased efficiency in a hospital. There is no one to educate them to the value and, even were they convinced of the value, only a few could afford to pay the charges a hospital must demand in order to meet expenses. In the West we have not secured endowments for our hospitals as they have in the East. That, of course, is a great source of revenue. The churches have not supported the hospitals in the West as they do in the East. This is another source of revenue in the form of gifts. The lodges could be called upon to support in a smaller way by taking care of a number of beds in a hospital. Economy in the hospital management has long been considered a crying need and yet the per capita rate for the western hospitals is much lower than it is in the East, so that we cannot look for a very marked decrease in the running expenses of any of our hospitals.

Demands on the General Practitioner. When the general practitioner sends a patient to the hospital, if everything goes all right and he makes a fairly good case record and discharges the patient as cured, usually there is no criticism but, if the same man should happen to have a patient die in the hospital, even tho it was unavoidable, the Reviewing Committee would expect to find consultations, laboratory work, x-rays when necessary and operation if indicated.

Suppose this patient has only a small amount of money. The question then arises in the mind of the general practitioner, must I share what little this patient has with five or six men, or shall I treat this case in the hospital the same as I would in the home, do the best I can for him and, if a fatal termination is the result, I have done my duty. When a surgical procedure is indicated and the general practitioner realizes that the surgeon is going to take the greater part of any money the patient may have, there is, as a rule, no question of the procedure; every physician calls in the surgeon and bids good-bye to all chances of his own compensation. This naturally leads to the general practitioner qualifying himself to do surgery. To many who have studied hospital standardization this is one of the faults of the system and its solution is going to be a difficult problem.

Third Factor, The Surgeon. In the smaller communities of the state the most important problem of hospital standardization is to secure the cooperation of the surgeons with the general practitioners. Usually the surgeon has the hospital and does not care particularly for medical cases, unless they happen to be his own, and as a consequence we find two or more hospitals, where one would be sufficient for all purposes. The surgeon in the neighborhood has his private hospital and the other doctors have the general hospital. This should not be and yet how to solve this problem is, at present, a serious question; no one has any very definite ideas on the subject. The solution must come chiefly from the men who are in control of the situation in the various localities.

We have, then, three important problems in hospital standardization that should be discussed in these columns very freely: (1) How to secure additional revenue for hospitals, (2) How to solve the problem of the general practitioner in the larger comunities and (3) How to solve the problem of the surgeon and the general practitioner in the smaller communities. If you have any ideas along these lines kindly write a letter to the Department on Hospital Standardization, stating clearly your opinion, ideas and suggestions and, if you wish them published over your name, so state in your letter.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Nursing and Nursing Education in the United States. Report of Committee for the Study of Nursing Education of The Rockefeller Foundation. C. E. A. Winslow, Dr. Ph. Chairman. Cloth 513 pp. The Macmillan Co., New York, 1923.

This is the most important and valuable literary contribution to nursing and nursing education that has yet appeared. The book is the outcome of a committee first gathered under the auspices of the Rockefeller Foundation in 1918 to consider the subject of public health nursing. Both the committee and subject were gradually enlarged until the former included some twenty of the leading physicians and nurses in the country, and the investigation embraced the whole subject of nursing and nursing education in the United States. Besides that brilliant investigator, writer and speaker on public health and bacteriology, Prof. Winslow of Yale, there were on the committee such leaders in medicine as Drs. Biggs, Edsall, Emmett Holt and Welch, while that able worker in social research, Miss Josephine Goldmark, has been secretary and largely responsible for getting together the immense amount of material in the report.

The committee concludes that public health nursing, nursing education or hospital supervision are among the most attractive fields no open to young women of high capacity. Of the 300,000 male and female nurses in the United States more than half are not graduate nurses but belong to the so-called "practical" class. This class should be registered and recognized legally by state legislation. The name of defined nursing aid or attendant is suggested for such nurses.

The committee finds the ordinary training of graduate nurses is inadequate and unbalanced. The living quarters are poor, the ward work is too hard and the course too long. It is believed that, with many suggested improvements in training, the course may be profitably cut to twenty-eight months in place of the prevailing three years. A course of eight to nine months is recommended for the "nursing aides." For higher education of nurses in public health and executive positions provisions have already been made and others are suggested. This study takes up in detail the whole subject of the training of nurses, and the various concrete defects in the present system as exemplified by conditions found in the various hospitals of the country. The book is not dry reading like many formal reports, but full of living interest and will be highly appreciated by all graduate nurses or those in training. It will be the bible of those in charge of such training. WINSLOW.

Regional Anesthesia. By Gaston Labat, M.D., Lecturer on Regional Anesthesia at the New York University, etc. With a foreword by William J. Mayo, M.D. Octavo of 496 pages with 315 original illustrations. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $7.00 net.

In the foreword W. J. Mayo says that "regional anesthesia has come to stay. The exaggerated claim with regard to the relative advantages of regional anesthesia over ether has been one reason for delay in the general acknowledgement of its great value." Happily enough this book is one in which the author has been able to avoid extravagance of statement and to found his conclusions on premises with which every general surgeon will agree. The entire subject is treated with the most illuminating detail and the illustrations complement the text. In the final chapter the author discusses dispassionately the value of regional anesthesia, emphasizing the need of care and skill for its proper utilization, as well as its dangers and limitations; and in conclusion says: "The practice of regional anesthesia is an art. It requires special knowledge of anatomy, skill in the performance of its various procedures, experience in the method of handling patients, and gentleness in the execution of surgical procedures." This is the best book on this topic which has come before the reviewer.

STURGIS.

Multiple Sclerosis (Disseminated Sclerosis), Association for Research in Nervous and Mental Diseases. A Series of Investigations and Reports. Vol. II. (1921). 241 pp. $3.75. Paul B. Hoeber, New York. 1922.

The disease has **been approached** from all angles. The most capable neurologists in the United States were assigned to its various subdivisions, and their reports then submitted to the other members for discussion. In this way valuable points have been brought out which should be of interest not alone to the neurologist but to the general practitioner, since multiple sclerosis is a common disease of the nervous system, much more frequent than is generally supposed. This is not strange, when it is usually not diagnosed unless accompanied by all three of Charcot's classic symptoms, nystagmus, scanning speech and intention tremor. As a matter of fact the disease may be present with only one of these symptoms apparent, but with corroborative evidence. This book most satisfactorily gives the desired information.

The section on pathology is well illustrated with microsections and numerous statistical tables are reproduced. It is interesting to note that the topographic distribution of multiple sclerosis resembles that of simple goiter, inasmuch as it is prevalent in the same localities, especially in our own Northwest. Especially helpful in these reports are the conclusions of the commission given at the end of each subject. WILT.

Clinical Medicine, Tuesday Clinics at the Johns Hopkins Hospital. By Lewellys F. Barker, M.D., L.L.D., Professor of Medicine, Emeritus, Johns Hopkins University; Visiting Physician to Johns Hopkins Hospital, Baltimore, Md. Octavo of 617 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $7.00 net.

Professor Barker prefaces his work by some pages, in which he upholds the clinical lecture for medical students, now largely superceded by bedside attendance of the student on patients under supervision of instructors and internes. He believes that vox viva of an eminent teacher (not that he so characterizes himself) creates much more impression on the student than the printed word. He also feels that such talks before large bodies of students are of great value for the teacher in inspiring painstaking preparation and delivery of the vital, essential points in order to sustain the student's interest.

Some thirty-one diseases are considered in this

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volume, the patients being presented and the clinical analysis being carried thru the usual steps from history to treatment with all the brilliancy with which Barker is endowed. Under aortic insufficiency he brings out the fact (which Cabot has forcibly presented in his Physical Diagnosis) that with this one lesion there are commonly four murmurs, only one being of any import. The reviewer has found this condition very commonly misinterpreted by ordinarily good men. The aortic systolic murmer in these cases is often due to some roughening of inner surface of the artery. The apical systolic murmer arises from dilatation of the heart, while the apical presystolic murmer is an Austin Flint phenomenon. Only the aortic diastolic murmer tells the tale.

Space does not permit of an extended review of this book. It is this form of medical literature on the living patient that has always seemed of most practical value to the reviewer and Barker is one of our greatest clinical artists. Only one criticism seems demanded and that is the amount of costly space taken by the diologue with the student on each case, which might be omitted to the satisfaction of the medical reader, if not to the student. Books costing seven dollars can not afford to include the wisdom of medical students, even those at Johns Hopkins. WINSLOW.

Montaigne and Medicine. By James Spottiswoode Taylor. Commander, Medical Corps, U.S. Navy, M.D., F.A.S.C., etc. 244 pp. $3.75. Paul B. Hoeber, New York, 1922.

The life of a philosopher and essayist, when associated with medical matters, offers interesting reading. This work presents comments on contemporary physic and physicians of the essayist who lived four hundred years ago. He was for years a great sufferer from maladies which the profession could not alleviate, on which he discourses in an enlightening manner. "May I use no words which are not current in a Paris market," he explains, preferring " a black eye" to "ecchymosis of the subpalpebral areolar tissue." Among other things he seems to have suffered from stone. He quotes Pliny that, "there are three sorts of diseases, to escape any one of which a man has a title to destroy himself, the worst of which is stone in the bladder when the urine is suppressed."

He makes many interesting comments on the short-comings and errors of his medical friends. A bishop, who was his particular friend, underwent an operation on his advice. "When he was dead and opened, the stone was not in the bladder but in the kidney." He offers interesting observations as to his own physical conditions. "I think it would be more wholesome to eat more leisurely and less than to eat often; but I would have appetite and hunger done justice to." "Both well and weak, I have ever willingly suffered myself to obey the appetites that press upon me." "I hate remedies which are more troublesome than the disease itself. To be subject to the stone and subject to abstain from eating oysters are two evils instead of one." One will find this an interesting volume. SMITH.

Principles and Practice of Infant Feeding. By Julius Hess, Professor and Head of Department of Pediatrics, University of Illinois, etc. Illustrated. Third Revised and Enlarged Edition. 496 pp: $4.00. F. A. Davis Co., Philadelphia. 1922.

This third edition is so fully rewritten and enlarged as to constitute a new work. The rapid progress made in the past fifteen years in our knowledge of the physiology, pathology and metabolism of infancy makes any work of a decade ago obsolete and has necessitated a pretty thoro revision of this work, the last edition of which appeared only three years ago. The book is a brief comprehensive manual, which should give the student or practitioner the underlying principles as well as practical directions for feeding infants. The statement that one-fourth of the civilized race die during the first year of life and sixty per cent of these from nutritional disturbances shows how great the need of more general knowledge and better treatment of these conditions.

In the section on nutritional disturbances the author has adopted the clinical classification of Finklestein, but gives the condition descriptive English names which mean more to the American practitioner. He also gives the most satisfactory etiologic classification which can be found. After assimilating the matter given in this book, the practitioner should be able to diagnose the trouble with a baby which is not thriving and treat it scientifically. DURAND.

Endocrine Therapeutics. By Thomas Bodley Scott. Author of "Modern Medicine and Some Modern Remedies." 118 pp. $1.50. P. Blakiston's Son & Company, Philadelphia, 1922.

This is not a digest of endocrinology, but a discussion of some phases of this subject. It is devoted chiefly to the adrenals and the thyroid gland. The author states that perhaps the majority of morbid condition can be brought under the heading of deficiency diseases. He says that in the past there have been no such curative weapons in one's hands as the internal secretions. Strychnine is a tonic because it stimulates the output of adrenalin. The iodides produce their effects chiefly by stimulating the thyroid to greater activity. The suprarenal secretion enables us to meet successfully the great emergencies of life. The human brain probably owes its superiority over the animal brain to the adrenal cortex. He says of the thyroid that its chief function is the rule of the body's metabolism. Even in health the extract given internally increases the nitrogenous excretion. The uncleared ashbin kills most of us. When the thyroid fails in its offices, the ashbin becomes more clogged. That is subthyroidism. This is a very readable little work, written in an interesting and attractive style. SMITH.

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ADDRESS

OUR SURGICAL HERITAGE THRU THE LIFE WORK OF DR. JOHN McLOUGHLIN*.

J. B. McNerthney, M.D., F.A.C.S.

TACOMA, WASH.

The privilege of addressing this representative body of American and Canadian surgeons, who have gathered from all parts of the great Pacific Northwest, is worthy of a subject that furnishes abundance of material for thought, all to be found in the life work of Dr. John McLoughlin, Governor of Oregon, country surgeon, friend of the poor immigrant, peace maker between Great Britain and the United States, who labored in the Pacific Northwest for half a century in the interest of suffering humanity and our great profession.

Recently, in the little town of Blaine which marks our boundary line, it was timely and fitting that our two great countries dedicated a gateway, called the "Portal of Peace." I can only confirm the words full of meaning that are found on the American facing, that, since the birth of our great profession, we too are children of a common mother, interested at all times in preserving the health of our people.

There are fragmentary sayings, vibrant as any of the ancient liturgies, and none more encouraging than, "What God hath wrought," the first message transmitted by the electric telegraph, which might well be chosen to express the thoughts of one surveying the surgical field in the Pacific Northwest today, and comparing it with that time, distant from the present by the span of only fourscore years. The history of surgery in the Northwest is forever linked with the growth and progress of the West. The surgeons accompanied the fur traders, and were among the first to enter this vast unknown region. They witnessed the transformation of our American desserts and forests and Canadian prairies into healthful and flourishing commonwealths. It was the heroic work of the army surgeons, Reed, Carroll, Lazear and finally the crowning feat of Gen. William C. Gorgas, that conquered the insect enemies, and with the help of powerful machinery broke the formidable barrier of the mountain chain, and let the waters of ocean and ocean blend together, as did the blending of the people to make a happier, wiser and more healthful world.

There are few of us but love to ramble back over a distance of time and retread the trails of our early trials and struggles. Even those in the religious life might well review and try to follow the life of the Great Master, the true Healer of men. He who develops patriotism might well follow the trails of Washington and Lincoln. Those who love adventure and spread the gospel might follow in the path of the noble Marquette. To surgeons who are students, not alone of the manifestation of disease, but also of the workings of human nature, there are few chapters in the history of surgery more interesting than those which record the pioneer work done by the surgeons of all parts of the world, and none more fascinating than the niche made by the subject of this sketch, Dr. John McLoughlin, one of the unique characters of our great Northwest.

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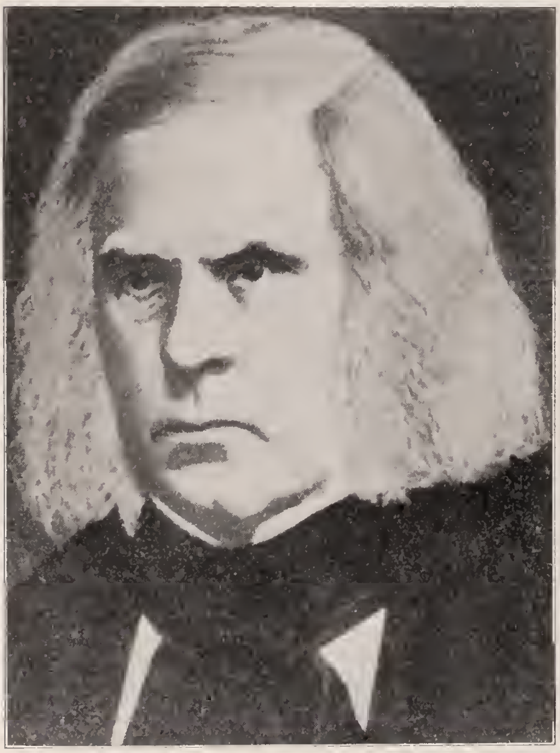
* President's Address, read before meeting of North Pacific Surgical Society, Tacoma, Wash., Dec., 1922.

It helps us in this busy age to review the lives of men of a somewhat different period. As Osler says, "It helps us immensely to be a bit of a hero worshipper, and to tell the stories of the lives of the masters does much to stimulate our ambitions and arouse our sympathies." To us, the members of the North Pacific Surgical Society, whose membership comes from the very region where the life work of this great leader and surgeon was spent, he cannot help being of interest. And could we only keep alive the stories of such a character and disseminate the spirit which prompted the man under such adversities to live for ideals, there would be less reason for modern complaints.



Dr. John McLoughlin was born October 19, 1784, in Canada, about one hundred and twenty miles below Quebec. His father was John McLoughlin, a native of Ireland, who was accidently drowned, leaving seven children. His mother's name was Fraser, a beautiful character, who was born in the parish of Beaumont, Canada. John and David were the only boys. Their only maternal uncle was Samuel Fraser, M. D., who was doubtless a factor in both boys becoming physicians. David loved the sea and after graduation joined the British Navy. John was educated in Canada and Scotland. He loved the woods, rivers and rolling prairies. It was doubtless the same spirit that lured Dr. Wilfred Grenfell to a life of sacrifice in far off Labrador. It was the same spirit that prompted Dr. William Beaumont to buy and borrow his patient St. Martin, and travel from country to country in the interest of pure science.

Picture this young man, the type of our late and greatly beloved Dr. Kenneth A. J. Mackenzie, his very presence blending to an atmosphere of culture, a well shaped head and face, a mouth the mark of indomitable courage, lips that softened and whispered words of encouragement to the sick and needy. However, we are told that at Fort Vancouver, Dr. John McLoughlin, lived and ruled in a manner befitting the chief of the Western Empire, but always with a graciousness and courtesy, becoming a man of his profession and representative of the Hudson Bay Company.

Let us again get a mental picture of this man, cultured and well trained in medicine in 1824, at a time in the Northwest, when it was not safe for the fur traders' companies parties to travel, unless heavily armed to protect them from treacherous, hostile, cruel and crafty savages. However, the lure of adventure and opportunity to serve a class of suffering not reached by others of his profession caused him to become doctor for the fur trading company, the well known Hudson Bay Co.

Dr. McLoughlin proved a very unique figure in the development of the Pacific Northwest. Think of it. Without any comforting, guiding inspiring influence except examples of nature and wonder about him, what a moral and intellectual nature his must have been that, amid temptations of a western frontier, he was always able to remain above the common herd, and retain his splendid manhood, capable of performing the noblest statesmanship of his time, becoming governor of the great territory of Oregon, a peace maker between Great Britain and the United States and the most beloved man of this vast region.

It is true he did not have the clinic of a Mayo, nor the opportunity and marvelous technic of a Crile, but, more like the great and immortal McDowell, any shed would give shelter to the suffering and he would do the rest. His great common sense and practical application would make you think of our late and greatly beloved Dr. John B. Murphy. His thundering periods of denunciation and condemnation for what he thought was unkind or unjust makes the type of his character stand out as a shining light of his time. Thruout the United States and Canada today there are many towns without a hospital. Not so in his time and place. We find a neat little building in a shady nook set aside out of fifty buildings as the hospital.

His benevolent work in this hospital was confined to no church, sect or race of men but was as broad as suffering humanity. In one corner was a patient—a trapper, not confined by sickness—for years as a trapper, who had lived close to nature hunting and fur trapping among the mountains, valleys and streams. Recently, while on duty as a trapper and also as soldier protecting the settlers and immigrants from the savages, he had been wounded. His wounds were dressed and he was resting comfortably in the shed, slabbed-covered hospital of the wilderness.

In another corner was an Indian mother and by her side her little child, the only survivors of a once populous Indian village. Our own influenza, that brought sorrow and suffering to nearly every home, can be compared to the epidemic of 1829, according to Snowden, which, supposed to be the ague, broke out among the Indians along the Columbia and for three or four succeeding years raged with peculiar virulence. It is reported to have been more fatal among the tribes than even the smallpox had been. During the first summer after the disease, in some of the villages there were not enough living left to bury the dead. Those already afflicted fled to the sea coast, abandoning the dead and dying to the birds and beasts of prey, some of the villages being entirely deserted. Canoes were drawn up on the shore, fishing nets were abandoned, where they had been left, spread upon the trees to dry, and all the houses were left tenantless. The dogs were left but no other living thing gave evidence that the place had been inhabited. Here among the poor, the injured and afflicted with pestilence worked Dr. John McLoughlin.

Let us see how he stood among his pioneer contemporaries in culture. In review of all the character of the history of the Northwest, the one who stands out and takes first place is this great member of our profession, his country and his fellowmen. He endeared himself to the Indian. He was always considerate of the red man's feelings and rights. He never forgot that within the heart of the savage, whose skin happened to have a tinge of copper, this did not pigment the soul. By example, patience and kindness he taught, above all, that he was a gentleman, in whose heart was knightliness and honor.

It is but a brief span of years since this intellectual giant of his time, who now sleeps in peace where rolls the Oregon, left us with a surgical and professional heritage to which we should aspire. And what honors can we do him. We might profit by the example of the great state of Oregon, which restored the name of Mt. McLoughlin to one of its most sublime snow-capped mountains in the southern part of the state.

It was by common consent that he was the first governor of the North Pacific Coast. He filled it with honor and, as Judge Deady of Oregon said, "he was distinguished for his justice and fair dealing with the Indians; he always literally obeyed the scriptural injunction to feed the hungry, visit the sick and clothe the naked." The people of Portland have thought to honor his memory by having his portrait hung in the state capitol, where you may look at it and show it to your children and they to their children. Years ago he laid down his life, somewhat in sorrow, somewhat in sadness and disappointment.

As one reviews the narratives of all these men of science and sacrifice, and as we get a more vivid exhibit of the facts, it becomes apparent to all of us that sorrow is one of the tripod of life—hope, happiness and sorrow. I think it was Robisson who said, "Sorrow is not an accident, occurring now and then. It is the woof which is woven into the warp of life and he, who has not discerned the divine sacredness of sorrow and the profound meaning which is concealed in pain, has yet to learn what life is."

The Oregon Donation Land Law took away his land claim and left him in poverty and he died grief stricken of a broken heart. Five years after he was laid in his grave, an act of tardy justice was done at last to the memory of this man who went down in sorrow to his grave.

We are under obligation to a pioneer physician and surgeon like Dr. John McLoughlin, who has handed down this surgical heritage. We should pledge ourselves to keep open the trail which has been blazed by the labors of a man of such character. The ignorant and proudly intellectual might call such a man a fossil type of doctor, but his life was one of principle and example.

One lesson which we might learn from him is that we endeavor to do productive surgery. There is too much of what might be called "extracting from the patient," doing little good by the surgery performed, just because the patient is willing. The example given us by this pioneer surgeon, statesman and benefactor, who was always producing something for the benefit of others, handicapped as he was by place and conditions of his time, is an inspiration to the medical student, to the young surgeon and to ourselves. Let us keep close to the trail, lest we get lost in this modern age of commercialism and lose the scientific spirit, upon which our work depends.

Another outstanding characteristic was his consistency—consistency to the last. We find it in all this great man's life work, and well may we learn it. We find consistency the basis of every modern business and profession that succeeds and lives. We find it among the successful practitioners of regular medicine and surgery. It is never found in quackery.

With the almost daily appearance of some new cult, proclaiming unlimited healing powers, one cannot but think that many of the great principles borne out by the life work of the great pioneer surgeon have been forgotten too often in our modern time. Could we successfully disseminate among the teaching forces the story, example and principle which governed the development of real scientific medicine, there would be a more hopeful chance to avoid the extremely serious danger of youth being carried away by what is false and unscientific.

Oh, great hearted fur trader, physician, surgeon and statesman! The immigrants and the Indians who had learned to love and trust their "great white faced master," as he was known amongst them, in fact the whole little nation along the Columbia, wept when he died, and felt that their little world was more lonesome when Dr. John McLoughlin went on his last call.

I believe in just two years more it will be one hundred years since this great surgeon founded, in a way, a nucleus upon which our society is built. Let us in a befitting manner celebrate this centennial.

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ORIGINAL CONTRIBUTION

TRIFACIAL NEURALGIA AND ITS TREATMENT*

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Trifacial neuralgia is a disease of the gasserian ganglion; its symptoms are distinctly different from those of the usual neuralgias of the face caused by dental caries and sinus infections. The disease usually begins in middle life. The attacks appear periodically, each one increasing in severity and duration until pain is more or less constant. It does not disappear spontaneously, neither is it relieved without definite surgical procedure. It has been noted, in treating 505 patients at the Mayo Clinic, that deep alcohol injection of the main branches of the gasserian ganglion gives definite relief for a time, but the radical operation, that is, division of the posterior sensory root, is imperative in order to secure instant and permanent relief.

The cause of trifacial neuralgia is still unknown. Certain observers have believed it to be due to ascending neuritis from dental caries, others to a degenerative change in the gasserian ganglion, and still others have believed it to be due to sclerosis in the ganglion. In contradistinction to this it is also believed that none of these conditions exist, since it has been impossible to demonstrate them either grossly or microscopically.

The belief that trifacial neuralgia is due to infection of the ganglion or is the result of infection elsewhere in the system cannot be excluded. I have seen patients with more or less constant neuralgic pain in the ophthalmic branch following herpes ophthalmia, which was relieved by division of the posterior sensory root. On the other hand, I have never seen patients with trifacial neuralgia cured by the removal of foci of infection. However, I believe that it is fair to assume that the disease must be the result of a previous infection, because infections have been demonstrated in the ganglion in intercoastal neuralgia associated with, or following, herpes zoster, because multiple sclerosis is supposed to be due to an infection, and also, because the central nervous system changes of syphilis are the result of *Treponema pallidum.*

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* Read before a special meeting of the Utah State Medical Association, Salt Lake City, Utah, June 30-July 1, 1922.

SYMPTOMS

Trifacial neuralgia usually occurs at about the thirty-fifth year; it may occur much earlier, and occasionally much later in life. The atacks at first are mild, simulating tooth-ache, but they increase in severity and duration. Not infrequently a patient presents himself to his physician complaining of a tooth or of a sinus; he is quite sure that if the local trouble were removed the pain would subside. The attacks of pain continue, however, even after one or more teeth have been removed or the sinus has been drained and irrigated. The attacks of pain are brought on by external irritation, such as washing the face, cleansing the teeth, chewing, swallowing, talking, and even exposure to air currents. At first the pain comes only during the waking hours, not at night unless the patient awakens, and differs from pain caused by an infected tooth or sinus which remains more or less constant regardless of sleep, and generally prevents sleep. Trifacial neuralgic pain is described as sudden, severe, sharp, shooting, lancinating, and excruciating; some patients compare it to an electric shock thru the face, and others to the jabbing of a red-hot poker into the cheek or jaws. The attacks are of short duration, lasting from a few seconds to a minute or two and often during the paroxysm the face and eyes become congested, tears overflow, and patients resort to various contortions in an effort to obtain relief, such as chewing, rubbing the face, stooping forward, and pressing the cheek.

It is interesting to know that irritation of the trigger zones is associated with the onset of the attacks. For instance, a patient may have neuralgia of the superior maxillary division with a trigger zone on the chin which, if touched, will start the paroxysm in the maxillary division; or the trigger zone may be at the angle of the nose, as in mandibular division neuralgia. Trifacial neuralgia is more prone to occur in the third and second divisions than in the ophthalmic division. At first usually only one branch is involved, but, as the disease continues, the other branches, including the ophthalmic division, are also affected; however, the ophthalmic division is not so often affected as are the superior maxillary and mandibular divisions. In one case of double neuralgia the trigger zone was on the opposite side. Usually one side of the face only is affected, but occasionally (in about three per cent of cases) the neuralgia is double with a history of more severe pain on the side on which it began, and of comparatively short periods between onsets. It is also of interest that patients, suffering for several years from unilateral neuralgia, will not experience double neuralgia.

DISCUSSION OF MAYO CLINIC CASES

A review of the records at the Mayo Clinic shows that, of 505 patients suffering from trifacial neuralgia registering since 1910, 275 were males and 230 females. In 327 of the cases the right side only was involved, in 167 the left side only, and in eleven cases both sides were involved. The youngest patient seeking relief was twenty-two years of age, and the oldest was eighty-three. The average age of this group of patients was fifty-four and one-half years, and the average duration of symptoms was approximately eight and one-half years. Twelve patients had chronic nephritis associated with trifacial neuralgia, nine had diabetes, eight had syphilis, fifty-one had symptoms referable to cerebral arteriosclerosis, thirty-one had sclerotic changes of the brain and cord, forty-one had migraine, one had intercostal neuralgia, and seven had sciatica.

The ophthalmic division alone was involved in three patients, the superior maxillary division of the middle meningeal artery and the use of special instruments and cotton pledgets.
alone in eighty-three, the mandibular division alone in 107, the first and second divisions in forty-four, the first and third divisions in four, the second and third divisions in 181, the first, second, and third in seventy-seven; no record was made of the division involved in six.

One thousand five hundred seventy alcoholic injections were administered during the course of treatment of these patients, an average of 3.5 injections for each patient. The average period of relief from pain was seven and seven-tenths months. Besides the alcoholic injections, 122 avulsions of peripheral nerves were performed for palliative purposes. In 226 cases teeth were removed, and in fifty-one cases palliative operations on the nose, throat, and mouth were performed. A summary of the measures introduced for palliative relief reveals a total of 1969 palliative operations, performed either by referring physicians or in the Clinic. Aside from temporary relief following alcoholic injection and avulsion of the peripheral nerve, very little has been accomplished, despite the large number of palliative operations performed. No material relief was obtained from the removal of teeth nor from the fifty-one nose and throat operations; in some instances there was a subsidence of the attacks, but the period of relief was more likely to be coincident to the natural interval of quiescence common to the disease, since the neuralgia returned with its usual regularity. Alcoholic injections and peripheral nerve avulsions, if properly carried out, break attacks and prolong the quiescent period.

With the institution of the radical operation, or division of the posterior sensory root fibers, the patient is afforded instant and permanent relief. We have performed the radical operation in 208 cases, and alcoholic injections have been given in 297; this group represents many patients who came for treatment prior to encouragement of the radical procedure, patients who were too feeble to stand the shock of surgery, and patients who were under observation and were advised to have two or three injections before submitting to the radical operation. Of the patients who were subjected to the radical operation, one had nephritis, four had diabetes, three had syphilis, twenty-three had cerebral sclerosis, eighteen had sclerosis of the brain and cord, twenty-nine had migraine, and three had sciatica.

Of the 208 operations performed, one was a Hutcheson operation, fifteen were ganglionectomies, forty-two were avulsions of the entire posterior root, twenty-two were division of the sensory root by partially cutting and partially avulsing the root, and 128 were cutting of the root sharply, posterior to the crest of the petrous bone. The motor root was preserved in twelve consecutive patients, the last twelve operated on. I believe that the ideal operation for trifacial neuralgia is cutting the root on the crest of the petrous bone, and preserving the motor root, since no more time is required for this procedure, and paralysis of the pterygoid, temporal and masseter muscles is prevented.

Since the use of the illuminated retractor the technic of avulsing the posterior root has been very much more accurate. Three patients operated on previous to its employment had recurrences and on reoperation it was found that the sensory fibers had been left, accidentally. The retractor exposes the ganglion, the posterior root, and the dural opening above the petrous bone as well as the entire region involved.

In addition to the 208 cases of trifacial neuralgia we have had five atypical cases in which the posterior root was divided. Two of these patients had pain following herpes ophthalmia; both were relieved following operation. In one the posterior root was partially divided and the ganglion and the third branch were resected without relief from pain. In two patients the posterior root was divided without relief.

One hundred and seventy-six of the 208 patients obtained instant relief. Twenty-two of the patients were relieved from the typical pain of trifacial neuralgia, but the administration of nerve sedatives and symptomatic treatment were necessary. Eighteen of these patients became well subsequently; two complained of pain in the eye, and two had syphilis of the central nervous system. This group of twenty-two cases is especially interesting, since the course and severity of the neuralgia had deranged the nervous system.

The mortality of operations for trifacial neuralgia is not so great as in abdominal surgery. In many instances patients operated on for trifacial neuralgia are past sixty years of age. Of the last 116 patients operated on at the Clinic, three died. Death in one case was due to diabetes, and in the other two to cerebral arteriosclerosis. One patient developed hemiplegia on the affected side, with thrombosis of the vessels and softening of the brain on the opposite side.

Records have been quoted, in which a large number of patients have been operated on without a fatality, but a greater surgical risk is warranted in patients with severe neuralgia which cannot be relieved by either alcohol injection or peripheral nerve avulsion. Radical operation is justifiable in such cases, when the mortality is not greater than two per cent.

TREATMENT

It is quite generally accepted that the radical operation for trifacial neuralgia, division of the sensory root, is the treatment of choice for instant and permanent cure. For patients with a short history of trifacial neuralgia and for patients with doubtful trifacial neuralgia, I believe deep alcohol injection should be employed one, two, or three times, and that it should also be employed for patients, such as the aged and feeble, and those with severe cardiac or renal disease who cannot stand the risk of the radical operation.

The radical operation has been regarded as a very dangerous and hazardous procedure on account of the possible associated hemorrhages, trauma to the brain, ocular palsy, trophic keratitis, facial paralysis, and motor paralysis of the pterygoids, temporal, and masseter muscles. With the present technic, hemorrhages rarely occur, and, if they do occur, they may be controlled by ligation

In our early experience, trauma to the brain following rents in the dura was not uncommon, owing to the cumbersome instruments that were employed; but we are now able to elevate the dura with the temporal lobe and expose the ganglion and posterior root without trauma. Ocular palsy was due to the use of a heavy instrument and cotton sponges which produced pressure on the third, fourth, and sixth cranial nerves, but with the illuminated retractor now in use the dura is held taut without causing pressure on these nerves.

Trophic keratitis occurs occasionally, but rarely follows operation immediately; it is generally caused by abrasions of the cornea, due to the entrance of foreign bodies. Precaution against immediate postoperative keratitis is taken by avoiding trauma to the ophthalmic portion of the gasserian ganglion during operation. Facial paralysis develops occasionally, regardless of the technic employed or the care exercised by the surgeon. We have all had the experience of operating on a long series of patients without paralysis, and then seeing it develop without any known cause. It is consoling to know, however, that facial paralysis, as a rule, is only temporary, and recovery is spontaneous; it is imperative, of course, that the cornea be protected during this period. Motor paralysis of the pterygoid, temporal, and masseter muscles, following avulsion or division of the entire posterior root, can now be avoided by previous isolation of the motor branch from the sensory fibers. On division of the sensory root posterior to the ganglion, the patient will be relieved immediately, but the face and eye, and the margin of the tongue will be numb. This is very annoying at first; it is the same type of numbness that is experienced following successful alcoholic injections of the peripheral branches, only more extensive. It is well, therefore, to administer two or three alcohol injections prior to the radical operation, so that the patient will become accustomed to the unpleasant sensation before the root is divided. After one or two recurrences of neuralgic pain, patients, as a rule, gladly accept the numbness in exchange for the spasmodic excruciating lightning pain incident to the disease.

SURGICAL TECHNIC

When preparing the patient for the radical operation, it is only necessary to shave a small area of skin over the temporal region. The incision is made in front of the ear, and extends upward and backward from the zygoma; the lower point of the incision is 1 cm. in front of the tragus of the lower margin of the zygoma, the upper point 5 cm. above the helix of the ear. The temporal fascia is also incised for a distance of 5 mm. in each direction at right angles to the incision along the upper margin of the zygoma, before the muscle is incised. This is followed with a trephine opening in the skull enlarged to about 3 cm. in diameter. The opening is enlarged downward and inward, so that the approach will be directly inward along the floor of the middle fossa. The dura is elevated, the middle meningeal artery is ligated, and the third branch identified. The dissection is carried upward and backward, elevating the dura from the arachnoid which is attached to the ganglion, but is free from the posterior root fibers. As the dissection is carried up over the posterior root, the arachnoid is seen to pulsate, owing to the cerebral pulse. The arachnoid over the posterior root fibers is then opened by a small sharp right angled knife, after which all the sensory root fibers in the posterior margin of the ganglion are exposed. The motor root lies underneath the sensory root on the mesial side until it approaches the gasserian ganglion, when it turns fairly abruptly and passes obliquely downward and outward underneath the gasserian ganglion thru a separate sheath of the third branch into which it diffuses. Before the sensory root fibers are divided, the motor root is brought into view and preserved during division of the sensory root by gently elevating the posterior margin of the ganglion and partially rotating the sensory root outward from the mesial side. The assistant holds the illuminated retractor, and the surgeon uses one hook to elevate the ganglion and the other partially to retract and rotate the sensory root. The motor root lies underneath the sensory root and ganglion, and takes a downward and outward course, rather than following the posterior sensory root fibers to the ophthalmic portion of the ganglion. When the motor root is isolated, the sensory root is divided with a sharp, small, right-angled dissecting knife. Care should be exercised, before closing the wound, to make sure that all of the sensory root fibers have been divided, and that all bleeding has been controlled; if necessary, a small iodoform gauze pack is used, and removed in from twenty-four to forty-eight hours. The muscles, fascia, and skin are closed in layers.

Aside from the application of ice-bags to the head for two or three days, for the comfort of the patient, the postoperative care is practically the same as that for general surgical cases. During operation the eyelids are closed with a strip of adhesive which is removed after the patient has recovered from the anesthetic; the eye is then covered with a Buller's shield to avoid any abrasions or unnecessary rubbing during the immediate convalescence. As a precautionary measure against the entrance of foreign bodies into the eye, or abrasions to the cornea, the patient is advised to wear a close-fitting goggle for about a year, when out in the dust, wind or snow. He is also advised to irrigate the eye twice daily with 2 per cent boric acid solution in order to eliminate any possible small foreign bodies. From ten to fourteen days are required, usually, for convalescence. Aside from protection of the eye and general postoperative surgical attention, no special care is necessary.

SUMMARY

Trifacial neuralgia is a much dreaded disease; it will not stop spontaneously, but can be relieved both temporarily and permanently. Such relief does not come from the eradication of foci of infection, such as removal of teeth or the draining of sinuses, but temporarily follows deep alcoholic injection and avulsion of the peripheral branches, and permanently follows the division of the sensory root of the gasserian ganglion. The radical operation is the operation of choice after one, two or three alcoholic injections. While operation necessarily produces anesthesia of the side of the face operated on, it does not result in facial disfigurement or impaired health, and is a godsend to the patient who is practically a permanent invalid, if not relieved.

ACUTE EPIDEMIC ENCEPHALITIS*

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Encephalitis is interesting intrinsically and also because it is a wholly new disease in this country. The first cases were reported in New York, in March, 1919. Dr. Dowling saw perhaps the first case here in January, 1919. My first case was seen in August, 1919, and I reported a number of cases in October in NORTHWEST MEDICINE of that year. The disease was observed in Austria in the winter of 1916-17, and in France and England in 1918. But, as there is really nothing new under the sun, historical research shows that encephalitis has been known for some five hundred years or more, occurring particularly after outbreaks of influenza. It was described as nona in Austria and Italy after the influenza epidemic of 1889 and 1890.

The disease in this country tends to spare children, because only 5.5 per cent of cases have occurred in them, whereas in Great Britain about 20 per cent of cases have been in children, or about the proportion that this age bears to the entire population. In this country the more susceptible age-period to encephalitis is from twenty to fifty years, while the proportion of male to female patients is as three to two. Physicians are attacked sixteen times more often than any other class in the community.

The occurrence of more than one patient in a house is rare. Encephalitis was observed in more than one individual in the same domicile once in 206 cases in this country, and in four instances in 213 cases abroad. The seasonal incidence is important, as the disease is usually a disease of the colder months.

Encephalitis means inflammation of the entire brain. As a matter of fact, the epidemic type may involve the whole cerebrospinal system, brain, cord and nerves. The gray matter is chiefly affected, so that we have more precisely a polioencephalomyelitis. As the meninges are usually but slightly implicated, we have generally a low cell count in the spinal fluid and lack of stiffness of the neck and Kernig's sign.

The brain stem, the interbrain and midbrain are the most obvious seats of pathology, while the most common symptoms arise from focal infection of the nuclei of the twelve cranial nerves. The pathology briefly includes exudation of leukocytes about the blood vessels, hemorrhages and edema, proliferation of neuroglia and degeneration of ganglion cells.

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Symptoms may be due to inflammation and pressure from edema or hemorrhage on the nuclei or trunks of the cranial nerves, or to toxin. Spinal symptoms are of the irritative or paralytic type. Originating at the cortical level, irritation may lead to jacksonian epilepsy. Originating at the corpus striatum level, irritative symptoms are exhibited, as choreiform movements and the parkinsonian syndrome, and at the same level thalamic irritation is examplified by severe generalized pain. Originating at the spinal level, irritation may result in twitching of single muscles or fasciculi.

Irritation of nerves results in neuritis proper, or pain may arise from radiculitis or inflammation of sensory nerve roots. In individual cases it is often impossible to discriminate between central, nerve root and purely neuritic pain. There seem, however, to be many cases of pure neuritis of encephalitic origin.

The paralytic types of spinal symptoms are of the anterior poliomyelitis or transverse myelitis varieties. The third nerve is often first involved, because the infection travels directly along the lymphatics from the nasopharynx to the pons.

Notwithstanding the fact that the spinal cord and nerves may be attacked in encephalitis it is essential to keep in mind that the chief seat of infection is in the midbrain and interbrain and brain stem, the stupor representing involvement of the interbrain, the choreiform movements and parkinsonian syndrome arising from the striate level, while the various palsies about the eye, face and mouth are due to focal infection of the nuclei of the cranial nerves.

I wish to present a clinical picture of encephalitis, but it is like trying to describe a whole picture gallery, the symptoms are so diverse. Even the groups of early symptoms are wholly different in different individuals and in different epidemics. It is really impossible to give a complete picture of the disease in the allotted time.

There is, nevertheless, a characteristic group of four chief symptoms. (1) Cranial nerve palsies, (2) stupor, (3) fever, (4) weakness. I name them in order of importance, for cranial nerve palsies are decidedly the chief diagnostic criteria. I believe they are not essential to diagnosis, however. In answer to this question so great an authority as Dr. Peter Bassoe writes me, "I am always afraid to make a diagnosis in the absence of any eye symptoms whatever, but am satisfied by a temporary blurring of vision without any gross ocular palsy." Since seven cranial nerves supply the region of the eye alone, this is the part we look to for trouble in encephalitis. Dr. Wm. House, of Portland, in a letter, says, "I think cranial nerve involvement is not essential to making a diagnosis of encephalitis."

In twenty cases reported in Tilney's book fourteen showed cranial nerve involvement. We may conclude that eye symptoms are on the whole most important in diagnosis and we should always be on the constant watch for them. They are shown by double vision, blurred vision, ptosis, sluggish pupils, nystagmus, hallucinations of sight, optic neuritis and choked disks.

In addition other cranial nerve disturbances are seen, as disorders of taste and smell, dizziness, deafness, tinnitus, hyperesthesia of the face, thickness of speech, difficulty of swallowing, protrusion of the tongue to one side, disturbances of heart and respiration. Also paresis or spasm of the sternomastoid or trapezius from infection of the eleventh nerve. The most common symptoms of cranial nerve infections are double vision, ptosis, dizziness and facial paresis.

Stupor in some form and at some time is usually present. In milder cases it occurs as apathy and somnolence, from which the patients may be easily roused, but in severe cases it deepens into coma which may continue for weeks. Fever is usually moderate but is sometimes high, especially toward the end. It may begin early, or often not until five to seven days after the onset, and may be continuous or remittent. In chronic cases it is usually absent. Debility is present in all stages of encephalitis but may not be particularly prominent.

We may classify the early symptoms in the recent epidemic here into three groups.

1. Hiccup group. This is a rare initial symptom elsewhere. It is not mentioned in the ten groups of the New York Research Committee. Hiccup may be the patient's only symptom for five to ten days, when stupor, delirium, cranial nerve palsies and muscular twitchings develop. This bears out Rosenow's work in showing that the streptococcus of epidemic hiccup is identical with that of encephalitis, spasmodic torticollis and respiratory arrhythmias. Moreover, there were a great many

cases of epidemic hiccup at the beginning of the encephalitis outbreak. Most of these disappeared after the third day and were probably abortive cases of encephalitis.

2. The neuritic group. These cases begin with severe pains for days in various parts of the body, in the head, neck, shoulders, trunk or limbs. Some of these pains may be of central origin, some of posterior nerve root origin, but many simulate neuritis. They have often led to faulty diagnoses, as simple neuritis, sinusitis, appendicitis. I have had a patient who was operated upon for the latter. These pains may last many days, or rarely even weeks, before other encephalitis symptoms occur. These in my experience are more often at present muscular jerkings and twitchings and more or less rigidity, mask-like face, eye symptoms, stupor and delirium. In other words, following the earliest symptoms of pain, choreiform movements and often the parkinsonian syndrome without tremor are apt to ensue. Delirium is an early symptom and may be due to direct extension of the infection thru the cribriform plate of the ethmoid to the forebrain.

These two groups of early symptoms, the hiccup group and the neuritic group with myoclonic symptoms, have been prevalent thruout the Northwest, as Dr. House writes me from Portland and Dr. Epplen from Spokane. On the other hand, Dr. Bassoe writes me from Chicago that he has not seen an acute case there for two years and that we have more material here than in any part of the country.

3. The third group includes the cases we have been familiar with since 1919. The disease may begin with a cold, headache, asthenia, mild fever, nausea, vomiting, pains, defective or double vision, dizziness and somnolence. Slight fever, lassitude and double vision I should say are the commonest symptoms, but they are subject to great individual variation.

Many patients are ambulant and soon recover after a few days of hiccup, neuritis or double vision. The latter may have been of toxic origin. Progressive cases develop eye symptoms, mask-like face, delirium, stupor, coma, muscular twitchings, mono- or hemiparesis. Emotional disturbances are also common in the less severe cases, as crying, laughing, feeling of well being, unusual temper, inordinate talking, insomnia, wandering about, depression, etc.

Authorities have classified encephalitis into ten, seventeen or more types. To me this meticulosity confounds rather than clarifies the diagnosis. Sometimes the disease begins suddenly with delirium, coma or convulsions, especially in infants.

There is one more type I should like to note, what may be called the brain tumor group of encephalitis cases. Severe and constant headache, vomiting, with choked disks and paresis may exactly counterfeit brain tumor, and the cerebellar type with ataxia and falling may confound the elect. Lacking a characteristic history of encephalitis, I believe a positive diagnosis in some of these cases of apparent brain tumor is not possible without an autopsy or recovery.

Physical examination should be concerned with the following matters: Observance of the attitude, gait, and movements of the patient; tests for coordination, strength and tactile sense of the muscles; tests for the reflexes, and especially tests to bring out cranial nerve palsies. The eye grounds should always be examined, and tests made of the functions of the eighth nerve. The reflexes are variable. A Babinski may or may not be present. Stiffness of the neck and Kernig's sign are usually not marked. The white cell count is variable.

The spinal fluid is chiefly of negative diagnostic value. It is clear, sterile, often under pressure, and the cell count is low, moderate, or rarely high. It may be bloody. Characteristic of encephalitis are increased globulin, sugar content and mononuclear cells, and Lange's reaction, or change in color of colloidal gold solutions. It should be Wassermann negative.

Diagnosis. The discovery or history of cranial nerve palsies, stupor, fever and asthenia constitute the most reliable diagnostic criteria. One may first see a patient in any stage of the disease, or suffering from sequels, as paralysis agitans or mental disturbances, weeks or months after a forgotten abortive attack.

Differential diagnosis. Anterior poliomyelitis resembles encephalitis more closely in symptomatology and pathology than any other disease. Encephalitis more often occurs in the colder months and in adults, and brain symptoms are more prominent than cord symptoms. Infection of the pons and medulla may happen in either disease with acute bulbar paralysis.

When such a condition is found in summer, it may be diagnosed poliomyelitis but if seen in winter it may be considered encephalitis. If appearing, however, in the fall, then one can only throw up one's hands and give up the diagnosis, as Bassoe remarks.

Syphilis of the midbrain may imitate encephalitis and of course should always be considered.

The sudden onset, fever and negative Wassermann in encephalitis should exclude syphilis. On the other hand, a positive Wassermann does not rule out encephalitis. I have seen two patients with positive Wassermanns who had all the characteristic symptoms of encephalitis.

Hysteria must be kept in mind in diseases with emotional disturbances. The previous history of the patient and of the disease, the presence of fever and the absence of anesthetic areas and hemianopsia will usually eliminate hysteria.

Tuberculous meningitis in some instances cannot be differentiated from encephalitis. A high cell count and presence of tubercle bacilli in the spinal fluid are conclusive. Early paralysis is uncommon in tuberculous meningitis and the sugar content of the spinal fluid is low, as compared with that in encephalitis.

Botulism and food poisoning may be confounded with encephalitis. Fever is absent and several persons are usually attacked in food poisoning or botulism. The etiologic bacillus may be found in the food in botulism. Blurred vision, diplopia, difficulty in swallowing and articulation are common to both botulism and encephalitis.

I have seen diabetic coma and acute appendicitis (followed by operation) mistaken for encephalitis by good practitioners. Glycosuria is not uncommon in coma from any cause. As so many diseases may be confused with encephalitis, it is not profitable to devote more time to possible differential diagnoses.

The course and prognosis are perhaps more uncertain than in any other disease. The more acute cases die within three weeks. Many cases are so little sick as to escape diagnosis. Dr. House has reported ninety acute cases, in which approximately one-third recovered, one-third died, and the other third were more or less permanently disabled. Even the third which recovered occupied six months or a year in the process.

In 145 cases from the Mt. Sinai hospital, 20 per cent died and 10 per cent developed progressive organic nervous diseases. From six months to two years afterwards two-thirds of the cases showed cranial nerve palsies and nearly as many other sequels, such as the parkinsonian syndrome, choreiform movements, tremor, insomnia and mental disturbances. The outlook to say the least is very uncertain. In acute cases very unfavorable symptoms are deep coma, high fever, relaxed sphincters and dysphagia.

Treatment. I have been asked to say a word about treatment. There is not much to say. Rosenow's serum is the only specific. I have contributed it to six patients. Three died and the others seemed to be improved by it. It is too soon to judge its efficacy. Serum sickness is often very marked. Rosenow says that the serum may not be efficient in different strains of the same coccus. Spinal puncture is valuable with signs of intracranial pressure, as coma, choked disks, spinal fluid under pressure. Forced feeding may be required by nasal tube. There is no scientific basis for giving urotropin which only acts in an acid medium as an antiseptic, not in the alkaline or neutral fluids of the tissues.

Decompression may be indicated with great intracranial pressure and has been done by Dr. Swift, as he will tell you. This is an attempt to sketch roughly the salient points in encephalitis. It would require a great artist, such as Osler, to paint an adequate clinical picture in such a meager space.

THE PATHOLOGY OF ENCEPHALITIS LETHARGICA*

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There seems to be a growing tendency on the part of clinicians to think of pathology strictly in an anatomic sense, chiefly miscroscopic anatomy. This is to be regretted. Pathology is defined as "that branch of medicine which treats of the essentials of disease," not the essentials of diseased tissues but the essentials of the entire disease—its etiology, epidemiology, anatomic lesions, symptoms, course, and, in some cases, even the result of specific treatment. I venture the opinion that there are not in the entire category ten human diseases with lesions so distinctive that they are not duplicated in any other diseased condition.

These remarks are but a prelude to the discussion of encephalitis lethargica, and I hope they will illuminate the many minor points, which, taken as a whole, indicate something of the character of that disease, because there is not any one characteristic to which I can point and say: "This is pathogonomonic of encephalitis lethargica."

At the outset, let me say I think the term encephalitis lethargica should be stricken from our literature and from our minds, until more light is cast on the subject. Strong evidence exists that there is more than one form of encephalitis with lethargic symptoms and, until they can be diagnostically separated, all data will be confused, if the term encephalitis lethargica is in indiscriminate use.

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ETIOLOGY

Encephalitis lethargica, or, if you will permit me the term, the *original* encephalitis lethargica, seemingly was caused by a filterable virus, ultramicroscopic in size until grown artificially, when it took a diplo- or streptococcic form. By means of artificially grown virus, the disease was produced in rabbits, with symptoms and lesions corresponding to those in the human subject. From these rabbits the organism was again recovered.

Note that this was a *filterable* virus, ultramicroscopic, growing only under anaerobic conditions. Recently Rosenow has reported cases of encephalitis with lethargic symptoms caused by a *non*-filterable virus, microscopically plainly apparent as a streptococcus and grown under aerobic conditions. He duplicates the animal experiments previously outlined. He produced a streptococcic curative serum, used it in the cases of encephalitis with lethargic symptoms, and improvement was coincidental with its use. He offered it to the profession for farther testing and I am informed it has been used here in Seattle without benefit.

Query. Is the serum really inefficient and recovery in Rosenow's cases purely a coincidence? Or is failure here due to these Seattle cases being caused by the filterable virus of epidemic encephalitis, while the serum was a streptococcic serum? Such use would be like asking streptococcic serum to cure hydrophobia, since hydrophobia, too, is due to a filterable virus that attacks the central nervous system.

The virus of epidemic encephalitis was found culturally identical with that of infantile paralysis. Farther, they produced identical lesions in animals. Still farther, convalescent serum of one protected against the virus of the other, *when serum and virus were left in contact thirty minutes before injection.* Mixed and injected immediately, protection did not occur.

Monkeys were found only slightly susceptible to epidemic encephalitis virus, while highly susceptible to infantile paralysis virus. Rabbits were just the contrary, susceptible to epidemic encephalitis, refractory to infantile paralysis. Summed up, this work indicates that the virus of epidemic encephalitis and that of infantile paralysis are closely allied, as are the various strains of streptococci and pneumococci.

In England the first cases of epidemic encephalitis were mistaken for botulism because of the similar eye symptoms. Botulism is a strict toxin-produced disease. Is epidemic encephalitis toxin-produced? Botulism acts quickly, as quickly as a good stiff drink of wood alcohol; encephalitis has an incubation period. Botulism produces early lesions of the ganglionic cells; epidemic encephalitis has no such early lesions. Botulism has no recrudescence or relapse; it works its injury and quits, leaving only its scars. Epidemic encephalitis has many cases showing relapse or true recrudescence, one case being reported of mild invasion and mild course, after five months a flaring up with pain, myoclonic tremors. Or was this a case of Rosenow's streptococcic infection? We all know how prone certain types of streptococci are to produce focal infection.

Is the disease a local infection, or is the germ disseminated thruout the body by the blood stream? The organism has been cultivated from blood, brain and spinal fluid. The pituitary and kidneys usually show lesions.

EPIDEMIOLOGY

Epidemiology strengthens the impression that the virus of epidemic encephalitis is distinct from that of infantile paralysis. The former is most prevalent in winter, the latter in summer. Epidemic encephalitis mostly attacks adults, infantile paralysis mostly children.

Very helpful epidemial facts have come from Greenland, where the communities are small and widely separated, where also the rigorous climate restricts social intercourse. From this source we learn that transmission requires close contact, that the avenue of exit is mouth or nose, that the incubation period is about ten days and that recovered cases may act as carriers.

HISTOLOGIC FINDINGS

The histologic lesions in the earlier stages are those of non-purulent inflammation. Viewed under the microscope, there is nothing new, strange or startling. I venture to say that at one time or another I have seen corresponding abnormalities in every organ of the body and, finding only such commonplace lesions, one wonders at the grave results which follow. The explanation must lie in the vital character of the organ involved, or more concisely in the vital area involved. Were the changes elsewhere than in the midbrain and the brain-stem, I question if the symptoms or gravity of the disease would even approximate their present proportions.

The essential lesions are found in the midbrain and basal ganglia. There are no early retrograde changes; all that appear are reactionary in type, as if one had slipped a clamp onto a piece of tissue somewhere in that vicinity and the blood vessels were reacting to the irritation. The blood vessels are markedly congested. Usually there is petechial hemorrhage. There is round cell infiltration into the vessel walls, perivascular lymph spaces and frame work tissues, but only rarely is there any evidence of degeneration in the functional brain cells. In this it differs from botulism. If the exciting cause continues in effect, hyperplastic changes are added. Vessel walls are thickened, fibroblasts appear in their vicinity and the glia cells increase in number, but usually the parenchymatous cells are yet free from apparent lesion.

It would seem that up to this point, were the exciting cause rendered inert, a full and complete recovery would occur, since indications all point to interference with function from congestion and resultant edema, rather than actual lesions of the essential brain cells. But, should the exciting cause remain active, structural changes do appear in the ganglionic cells, from which recovery, either of cells or patient, will be uncertain at best.

A high proportion of encephalitis cases show involvement of pituitary gland and kidneys. The former might be explained by this organ being within the zone of reaction, as are the meninges, but not so the kidneys. These organs show parenchymatous changes, comparable to those of bichloride poisoning. This gives us pause. Such findings indicate the blood has carried some factor of injury from infection to kidney, and one conjectures if, after all, there is a toxin produced in this disease, or is the infecting organism located in the kidney also. I have been unable to find record of cultures taken from this organ.

That the infection may become chronic is indicated by recrudescence of early symptoms. The disease follows the rule of infections, resulting in death or rapid recovery when the invasion is sharp and severe, while an insidious invasion is usually followed by a halting recovery.

The symptoms have been treated by other speakers. An anatomic explanation of the multiplicity of symptoms has been offered. It is that the corpus striatum is composed of two parts developmentally, the old and the new portions. The paleostrial portion contains giant ganglionic cells, controlling automatic associated movement. The new portion, in addition to the giant cells, contains smaller neostrial cells, whose function is coordination and inhibition. If only the paleostrial cells are involved, the patient will have the paralysis agitans type of symptoms; if only neostrial cells are injured, he will have the choreiform type of symptoms; if both are involved, the symptoms will be of mixed type. Involvement of the pyramidal tract adds spastic paralysis; of the optic thalmus, pain, sometimes excruciating and uncontrolable by opiates; of the cerebellum, unconsciousness, absence of speech and later ataxia of the limbs, and often of head and neck.

PROGNOSIS

The prognosis has been changed since our early statistics were gathered. Early statistics, considering only severe hospital cases, gave 80 per cent of recovery. As retrospection has lengthened, we find that, after a three year interval, the same class of cases are given only 20 per cent of complete recovery, since improvement in many cases ceases and psychic symptoms develop. A recent survey of twenty-five cases, observed at the children's psychiatric clinic after a three year interval, shows thirteen children with changed disposition. All were irritable, easily aroused to anger, intractable at school and home, some becoming untruthful, addicted to thieving. Two cases developed perverted sexual impulses.

The spinal fluid in early cases shows increase of globulins and glucose, with cell count from 6 to 203 per cm. of fluid, 75 to 95 per cent of which are monos. Usually the fluid is under moderate pressure. Late cases may be normal in every way.

Summarizing the foregoing, we find strong evidence exists that

1. There is more than one type of encephalitis with lethargic symptoms.
2. The virus of true epidemic encephalitis and that of infantile paralysis are closely allied, apparently different strains of the same type of organism.
3. The nares is the portal of entry and avenue of exit of the virus.
4. It is of low infectivity.
5. The incubation period is about ten days.
6. The virus possibly is at one time in the blood stream, but shows selective affinity for the central nervous system, attacking chiefly the mid-

brain and the basal ganglia.

7. The early lesions are those of nonpurulent inflammation, the ganglionic cells usually seeming free from lesion until sometime after symptoms develop.

8. Symptoms depend on the area involved.

9. Prognosis should be guarded, since beginning recovery may cease and serious psychic disturbances follow.

10. The spinal fluid usually shows moderate increase of cells, globulins and glucose in the early stages; later the fluid often is normal.

11. There is no specific treatment.

CEREBRAL SYMPTOMS OF ENCEPHALITIS LETHARGICA*

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The symptoms in encephalitis lethargica, due to pathology within the cranium, may be divided into the anterior nerve group and the posterior nerve group; the anterior nerves comprising the 1st to the 6th inclusive, the posterior from the 7th to the 12th. The symptoms of the anterior group are diplopia, disturbance to one of the ocular motor nerves, visual disturbance to the optic nerve, nystagmus (ocular), disturbance of smell, numbness or pain of the face. The symptoms of the posterior nerves may be vertigo with nystagmus due to labyrinthine disturbance, facial twitching, loss of taste, cerebellar nystagmus, jerking of the shoulders, disturbance in swallowing, hiccoughs, vasomotor changes and intestinal disturbance.

The general symptoms which may be associated either with the anterior type or posterior type are (1) headache (pressure upon the dura), (2) choked disc (edema of the optic nerve), (3) vertigo (edema of the auditory nerve), (4) gastro-intestinal disturbances (edema of the 4th ventricle), (5) falling sensation (cerebellar), (6) general muscular twitching and delirium (general edema). These symptoms, occurring as they do in groups, are in my opinion due to edema, either local or general in character. When the edema involves the region above the tentorium, one finds the anterior group involved; when the edema is basilar, the posterior group is involved; there is a left sided or right sided paralysis, when the edema is over the region of the vault. A one-sided paralysis is not uncommon as the onset in these cases.

When the edema is below the tentorium, the cerebellar symptoms and posterior group of nerves are involved and in this type we have as symptoms ringing in the ears, dizziness, and labyrinthine or cerebellar nystagmus, falling sensation, disturbance in past-pointing, and frequently the group of symptoms which are due to pressure on the floor of the 4th ventricle—dyspnea, Cheyne-Stokes respiration, hiccoughs and vasomotor disturbances. The general symptoms may occur in either type and are present, when the edema has reached the point where it becomes general rather than confined either to the base or over the region of the vault.

I believe, if we would look upon the symptoms of encephalitis lethargica from the standpoint of edema of the brain, we would get a much better picture in our minds of what is going on in the cranium. The posterior edema can be easily drained by spinal puncture. This is also true of the anterior edema in many cases, but frequently spinal puncture will not relieve the general pressure. This is probably due to an infiltration along the aqueduct of Sylvius which retards all communication between the 3rd and 4th ventricles. This point has been noted by many writers in autopsy reports.

In the study of the cases made by Dr. Nickson and myself from the standpoint of spinal pressure we have found that the average case presents this picture: (1) A moderate edema of the optic nerve, (2) a pressure ranging from 14 to 18 mm. The removal of 10 to 15 c.c. is usually sufficient to lower the pressure but never to normal, the pressure remaining about 6 or 8. This is quite different from the cases of brain tumor we have studied, in which the range of pressure may be from 20 to 30 mm. and in which, after removing 10 to 15 c.c. of fluid, the pressure drops to normal. The cell count in the spinal fluid in encephalitis is usually above 20, while in tumors it may not be increased materially. The Nonne in encephalitis as a rule is negative, while in tumors it is usually strongly positive.

In studying a series of cases of skull fracture a similar picture is presented as that of tumor of the brain with this difference, that, while the pressure may reach 20 or 22, it usually goes down to 6 on the first puncture and then gradually down to normal with subsequent punctures, unless, of course, the edema is very intense, in which case the pressure would be much higher. In the encephalitis cases the characteristic reaction is a dropping down to 6 but never to normal; daily punctures will give identical pressures.

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Regarding the treatment and the use of serum, I do not believe we are justified in condemning Rosenow's serum without giving it a fair trial. In the first place, Rosenow does not claim a specific serum for all localities. He claims his serum to be a streptococcus strain. I have used it in two cases, in one intravenous, in the other intraspinous. The first was a desperate case with a general edema, which finally died. The second was a similar case with severe edema, but the patient has recovered sufficiently to leave the hospital. I believe that the intraspinous method is the proper way to give the Rosenow serum.

In a series of 45 cases 6 were fatal. The table below shows the onset as to symptoms.

ONSET

Diplopia	20
Vertigo	10
Ptosis	6
Paresis accommodation	2
Cerebellar ataxia	2
Gastrointestinal	2
Trigeminal	1
Nystagmus	1
Hemianopsia	1
Taste	1
Hiccough	1

The end results regarding sequelae are shown in the following table.

RESULTS

Emotional disturbance	11
Squint	7
Decreased hearing	4
Paresis accommodation	4
Parkinsonian syndrome	3
Optic atrophy	2
Moron	2
No sequelae	1
Ataxia	1
Left hemiplegia	1
Ptosis	1

Four cases unknown.

The fatal cases are shown below.

	Onset	Result as shown by autopsy
(1) Miss J. O.	(25) Diplopia-Vertigo (Case Dr. Torland)	Cerebellar abscess
(2) Mr. J. C.	(65) Dizziness (Case Dr. Dudley)	Cerebellar abscess
(3) Mrs. C. P.	(31) Ptosis (Case Dr. Hoffman)	Cerebral hemorrhage
(4) Mr. E. C.	(35) Hiccough (Case Dr. Calhoun)	Unknown
(5) Mrs. W. W.	(60) Diplopia (Case Dr. Greiner)	Unknown
(6) Mr. R.	(32) Dizziness (Case Dr. Lippincott)	Cerebellar abscess

In conclusion, I wish to urge the members of this society to keep an accurate record of their encephalitis cases. Just because a patient has only one or two symptoms does not mean that he will not have a serious outcome, because some of the cases which began with a very small degree of diplopia have ended with the parkinsonian syndrome. Every case of encephalitis lethargica is serious. Rest is one of the most important factors in treatment.

LOWERING THE MORBIDITY AND MORTALITY RATE OF TOXIC GOITER*.

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The morbidity and mortality of toxic goiter varies inversely with our knowledge of the basic facts that underlie this disease and its treatment. A more thoro understanding of the physiology, pathology and pathologic physiology, and the effect of the different therapeutic measures upon pathology and pathologic physiology should reduce the mortality and morbidity of hyperthyroidism.

Our knowledge of the physiology of the thyroid gland entered a new epoch with the discovery of thyroxin by Kendall. This substance, while not of vital importance to life itself, is of vital importance to mental and physical activities. When absorbed in increased amounts, it produces physiologic and anatomic changes varying in severity with the amount absorbed. Owing to the fact that there is considerable variation in the clinical manifestations in the different types of toxic goiter, especially between those of the more acute hyperplastic types and the more chronic and cardiovascular types, it has been thought by some observers that there are other factors that enter into the production of thyrotoxicosis beside the hypersecretion of thyroxin. Harris has attributed this to the other glands of internal secretion thru the hormonic action of thyroxin. Bircher is of the opinion that the hyperactivity of the thyroid gland is the result of a pathologic process elsewhere, and that the changes in the thyroid are the direct results of toxines thus produced. Kendall has suggested that the thyroxin molecule may vary somewhat in its composition, and, as a result, produces different chains of symptoms. Another theory advanced has been that there are other active principles in the thyroid secretion beside thyroxin.

A study of the action of other toxic substances, when administered in varying amounts over various periods of time, shows that there is a distinct difference in the symptoms when the substance is administered in large amounts over a short period of time and when administered in small amounts over a long period of time. Thus, the symptoms of acute arsenic poisoning are very much different from those of chronic arsenic poisoning. This being true of other substances justifies the advancement of the theory that the difference between acute and chronic thyrotoxicosis lies mainly in the rate of absorption of excess thyroxin. In acute thyrotoxicosis there is a rapid absorption, as shown by the basal metabolic rate and by comparison of the symptoms of the patients suffering from acute thyrotoxicosis with animals, in which large amounts of thyroxin or dessicated thyroid have been administered. In chronic hyperthyroidism the chain of symptoms and the pathologic findings correspond to those seen in animals in the slow administration of thyroxin.

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Pathologically, the changes in the thyroid gland are fairly well understood, and may be classified in two main groups. First, hyperplastic toxic goiter, in which there are four definite stages, each shading into the other, viz.: (1) the stage of development, (2) the stage of maximum intensity, (3) the stage of retrogression, and (4) the stage of remission. The pathologic findings at the height of the first three stages are fairly constant, and correspond to the clinical manifestations. In the stage of remission there is considerable variation in the pathologic findings in different cases. Second, the cardiovascular group of toxic goiters which consists of adenomas, fetal, adult, and mixed, adenomatosis, and compensatory hyperplasia.

While the pathologic changes in other organs have been carefully studied by pathologists, the value of their findings has not been fully appreciated by clinicians.

Much experimental work has been done to show the effect of thyroxin upon the various organs in animals. Herring has shown that there is a definite enlargement of the heart, adrenals, spleen, pancreas, thymus and ovaries. The pituitary is diminished in size. Hashimoto found that, when dessicated thyroid is administered in small amounts over a long period of time, there is a definite cardiac hypertrophy. Hoskins believes that these changes, for the most part, are the result of an increased metabolism.

The most important changes outside of the thyroid gland are in the heart muscle. Fahr has shown that there is a definite myocardial change in hyperthyroidism. This consists of degenerative changes, fragmentation, and destruction of the muscle fiber in the neighborhood of the small blood vessels, with an accumulation of round cells. Goodpasture believes that this is a toxic myocarditis, resulting from the action of thyroxin. In addition to this, there are changes in other organs corresponding to those that have been found in the experimental work upon animals. When these changes have taken place, either because of an excessive oversecretion of thyroxin or because of a prolonged oversecretion in small amounts, either continuous or at intervals, permanent changes are produced, even tho the patient recovers from the thyroid lesion. This is especially true of changes in the heart muscle and tissues behind the eyeball.

Clinically, hyperthyroidism has been regarded as existing both in acute and chronic types, but there is considerable question whether the acute hyperthyroidism is an acute disease or an acute exacerbation of a chronic disease. This point is well illustrated by the following cases.

Case 1. Female, American, age 54, married.

First attack of hyperthyroidism at 20, following birth of triplets. She had a second attack at 35. Third attack began at 52. The patient at this time complained of being very nervous, especially at night, so that it disturbed her sleep; palpitation of the heart at times, tiring easily, and losing weight. Had some distress in the epigastrium with burning in the stomach and acid eructation.

Physical examination showed the thyroid gland practically normal in size, tremor, pulse of 108, systolic murmur heard best at the apex and transmitted to the axilla.

Subtotal double lobectomy gave marked relief. The patient gained in weight and the nervousness markedly improved. She feels better since the operation than she had felt for years before. She still has a tachycardia, a tremor, and some nervousness because of permanent lesions produced during the long period of hyperthyroidism.

Case 2. Female, age 46, married, housewife, mother of two children.

Her mother had a goiter as did her four sisters. Two of the sisters had toxic goiters. Patient has always lived in Great Lakes Basin or on the Pacific Coast.

She had one attack of toxic goiter at 22, and another at 27, following which she thought she completely recovered. At 44 she had an attack of exhaustion, accompanied by loud beatings of the heart, but no marked increased rapidity. She had a good appetite without any change in her weight, the bowels were regular. Shortly before the attack of exhaustion, she noticed some enlargement of the joints of her fingers. Since then other joints have become involved, but there has been no pain in any of the smaller joints, but has had some pain in the right elbow.

Physical examination showed a fairly well nourished woman, pulse 52, temperature normal, weight 149, systolic blood pressure 140, diastolic 80. Diffuse enlargement of both lobes of the thyroid gland.

At times a musical murmur could be heard over the thyroid gland, at other times a bruit, and at other times neither were to be heard. The heart tones were clear and distinct, there were no murmurs. The lungs were negative, abdomen negative, tremor present. The basal metabolic rate ranged from 13 to 19 per cent.

Following a subtotal double lobectomy, the patient made pronounced improvement. At present she feels perfectly well. Examination recently made was practically negative, except for persistent enlargement of the small joints of the fingers.

Pathologic report: Gross examination. The specimen consists of the greater portion of both lobes of the thyroid gland. In some places it is somewhat nodular. There is one cyst present. Microscopic examination. Solitary lymphoid nodules are present. The acini vary in size from fetal to adult, and most of them contain colloid. In one place a large mass of connective tissue with considerable round cell infiltration is present. In the center of the connective tissue is an area of acini, somewhat collapsed. From its appearance it is evidently a new growth.

I believe we should look upon a considerable portion of the cases of exophthalmic goiter not as an acute disease, but as a disease that lasts over a long period or years with acute exacerbations. It is a disease that runs in cycles, each cycle consisting of, first, the stage of onset, in which there is both a rapid development of symptoms and a rapid rise in the basal metabolic rate, the latter being more rapid than the symptoms would indicate; second, the stage of maximum intensity, in which the symptoms and metabolic rate run about parallel; third, the stage of retrogression, in which the metabolic rate and the symptoms both subside, the former dropping more rapidly than the latter; and, fourth, the stage of remission, during which the basal metabolic rate is approximately normal.

The symptoms, during the stage of remission, vary with the severity and the number of cycles thru which the patient has passed. In some cases there may be no symptoms at all, while in other cases the patients may give the impression of being quite toxic, when in reality the thyroxin secretion is normal or even subnormal. The length of the stage of remission varies greatly in different cases. In some patients there may never be a secondary attack, and yet subsequent changes show that the disease has been progressing. It must not be forgotten that many patients recover following the first attack. However, it is impossible to say, except after years of observation, that recovery has actually taken place and during this time permanent damage may have been done in the patients who do not recover.

The cardiovascular group of toxic goiters, represented pathologically by the adenomas, adenomatosis and compensatory hyperplasia, has an insidious onset. As a rule, the disease is steadily progressive, and, in the majority of cases, is not recognized early. Cardiac hypertrophy is one of the most constant findings. The patients show an increase in the basal metabolic rate that is always moderate at first, and may never become high. In the majority of our cases the rate has been below 40 per cent and in many of them it has been below 30 per cent.

The most constant symptom has been an increase in the pulse rate. Several cases have been referred to us by physicians because of an otherwise inexplainable tachycardia. Examination has shown goiters varying in size and a persistent increase in the basal metabolic rate. In the cases that have consented to operation, belonging to this group, recovery has taken place in all. In the more pronounced cases the usual symptoms of hyperthyroidism are present. Some of these patients complain of various sensations in the throat, such as pressure, drawing and indefinite pain. These symptoms are often of a type that the goiter would not produce mechanically. The following patient serves as an example.

Male, 41 years of age, American, married, occupation, laborer.

Complaint. Lame back, pains in the chest, inability to work, frequent cough, occipital headache, occasional nausea, tinnitus, indefinite pains in the neck, palpitation of the heart, shortness of breath and dizzy spells.

Family history negative.

Previous illnesses rheumatic fever at 21, influenza and pneumonia.

Physical examination. Pulse 76, blood pressure 118-72, enlargement both lobes of the thyroid with a nodule in the left lobe. Chest negative, abdomen negative, extremities negative, palms dry, moderate tremor, reflexes normal. Basal metabolic rate, plus 30 per cent.

Following operation, at which a considerable portion of both lobes were removed, the patient made a rapid recovery and has been completely relieved of all his symptoms. He has gained in weight and is now working steadily.

The careful selection of therapeutic measures to be followed in each particular patient is of great value in reducing the mortality and morbidity of this disease. Any therapeutic measure, which is designed to alleviate the attack from which the patient is suffering without preventing future attacks or the continuous oversecretion of thyroxin, is merely temporizing and is of value only in preparing the patient for such measures as will give permanent relief.

Medical treatment has no more place in the treatment of thyrotoxicosis than it does in that of acute appendicitis. In the latter disease there are times when, because of the lack of proper facilities or the precarious condition of the patient, it is inadvisable to resort to operative procedure, and the patient must be treated by palliative measures.

The use of x-ray, while advocated by some roentgenologists, has been discarded by practically all clinicians. Its effect upon the goiter is merely that of bringing about the stage of retrogression. The changes produced about the gland which make the subsequent operation more difficult, the dangers that occur with its use, the fact that patients who are treated by palliative measures are still hyperthyroids, and that the continuous secretion of thyroxin even in small amounts over a long period of time is inimical to the patient's welfare, are sufficient reasons to warrant discarding its use in hyperthyroidism.

The reduction of mortality from hyperthyroidism of the exophthalmic or hyperplastic type depends upon early operation, done in stages when the patient's condition will not warrant radical operation at once. In our work, we follow the following plan: If the patient is in good condition and the basal metabolic rate is below 50 per cent, a subtotal double lobectomy is done at once. If the patient is not in good condition, or if the basal metabolic rate is over 50 per cent, we never do radical operations without a preliminary ligation. If the rate is between 50 and 75 per cent and the patient's condition is good, both arteries are ligated at one time, but if the patient's condition is not good, only one artery is ligated at a time. If the basal metabolic rate is above 75 per cent, we never ligate more than one artery at a time, regardless of whether the patient is in good condition or not, and if the basal metabolic rate is over 100 per cent, the patient is always put in bed at rest, with an ice bag about the neck, sedatives to relieve the nervous condition, and digitalis for the heart for a few days. In patients who appear sick, even tho the basal metabolic rate may be low, we believe that a few days rest in bed before operation is of value, and then the preliminary ligation should be done before the radical work.

A surgeon's responsibility does not cease when the operation is completed. The damage that has been done by the thyroxin must be repaired as nearly as possible before the patient is discharged. This means that she must be fed properly, and given hospital or sanitarium treatment until the heart has recovered as fully as is possible, and until she has developed a nervous stability. In operating in the stage of remission in the exophthalmic goiters, hypothyroidism sometimes appears. This can be corrected by the administration of dessicated thyroid over a short period of time.

In the cardiovascular group of goiters it is likewise important to operate early. It has been our experience in this group of goiters, that preliminary ligation is of little value. In operating for adenomas the gland must be examined carefully, in order to know that no small adenomas are left. In compensatory hyperplasia there is more danger of hypothyroidism following the operation than in any other type. When this happens, dessicated thyroid should be administered.

Many of the cases of goiter give a history of having had the onset at the time of puberty, pregnancy or the menopause. While it is too early to make a positive statement, we are of the opinion that the administration of sodium iodide, one grain, three times a day for ten days, twice a year, from the age of eight to eighteen in all girls and the giving of an occasional course of sodium iodide during pregnancy to all women in the Pacific Northwest, and again during the menopause, would prevent the development of many of these cases.

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THE CHRONIC RUNNING EAR*

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There was a time not so very long ago, when a chronic running ear excited no particular alarm in the mind of the attending physician and no anxiety at all in the mind of the patient. On the contrary, the laity had become so firmly convinced of the harmlessness of a chronic discharge from the ear, that the idea became prevalent there could be no danger as long as the ear was "running."

However, times have changed, and it is now a well established fact that a chronic running ear may not only give rise to destruction of the hearing power, but that even life itself may become endanger. Even the most harmless in appearance may react in a deleterious manner on the general health of the patient, interfering in nutrition to such an extent as to render one much more susceptible to the prevalent infections at the time.

Realizing, then, the importance of a chronic running ear and the dangers from neglect, we may well inquire, "When may a discharge be regarded as chronic?" Altho the time element is an important factor in determining whether or not a running ear is chronic or acute, yet there are other factors even more significant than time that determine the chronicity of an aural discharge. For instance, certain systemic conditions as tuberculosis, anemia, spyhilis or general weakness, following a prolonged sickness, may determine at the outset that the discharge will run on indefinitely, but until these factors can be more definitely established we are forced to rely in the main on the time element.

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How long, then, must an ear be permitted to discharge before it is branded chronic? Various authors have set different limits, but they are all more or less arbitrary. It seems the part of wisdom to regard every discharging ear that has persisted for over six weeks a chronic running ear. This time limit is again arbitrary, but if the limit is to be altered it should be shortened rather than extended; not so much for the purpose of immediately instituting operative measures, as to put one on one's guard in order to search for the factors causing the chronicity.

This brings us to the main purpose of this communication, namely to draw attention to the pathology of the chronic running ear because no intelligent treatment can be instituted until the etiologic and pathologic factors present are recognized. There is no routine treatment for the chronic running ear, neither is there one operative procedure for its cure. The treatment depends entirely upon the pathologic changes present. In one case local applications to the tympanic cavity proper is all that is necessary; in another the removal of a nasal or nasopharyngeal focus of infection with subsequent treatment to the eustachian tube may suffice; in a third type a simple mastoid operation is sufficient, while in a fourth type the radical operation may be required. Then there are a small number of cases, in which none of the above measures will be successful in arresting the discharge. These are the cases, in which there is some underlying general dyscrasia which must be combated by appropriate systemic measures. If, then, such different procedures are indicated in different types of the chronic running ear, the necessity of a detailed study of every case is very apparent.

The term chronic running ear or chronic suppurative otitis media of itself is too general. It no more tells the story of the factors involved than does the general term constipation explain that trouble. We must search still further in order to answer the question more specifically. As the late A. H. Buck over a quarter of a century ago has well said, "If we wish to treat the case successfully, we must take cognizance of the exact condition of every square millimetre of the surface of the auditory canal, drum membrane, tympanic mucous membrane, etc., so far, at least, as it is possible to reach some of these remoter portions of the ear."

When such a detailed study has been made, more success in treatment may be looked for. In fact, much of the apathy of the laity and even of the general profession toward the chronic running ear is due in great part to this failure of determining the factors causing the chronicity. In lieu thereof, all cases of chronic discharge were considered alike and the same treatment instituted for all. Naturally there resulted many disappointments. What else could be expected? What else would be expected from any similar hit or miss plan adopted toward any other chronic condition? Hence the indifference usually adopted toward the chronic running ear is not justified. Given a proper detailed study of each individual case, much better results from treatment may be expected.

Aside from the fact that the earlier such study is made and treatment instituted, the better are the chances of cure, there are other reasons favoring an early recognition of the chronicity of an aural discharge, one being the fact that the longer the suppuration continues, the greater is the possibility of the hearing becoming permanently reduced because of an ankylosis of the ossicles and thickening and adhesions in the lining membrane of the tympanic cavity, to say nothing of the danger to life itself from extension of the suppurative focus to the cranial cavity. Of course some types are more prone to produce these complications than others, but a safe axiom to go by is that all running ears are a source of danger.

Instead of considering in detail the various conditions responsible for the discharge, let us take up the course of procedure necessary to adopt in the study of any individual case in order to properly determine into which class it belongs, whether it is a simple uncomplicated case, requiring only local tratment to the tympanic cavity, whether in addition there are present pathologic conditions in the nose and throat needing attention, whether there are present in the ear areas of granulation tissue or true polypi; or, finally, whether there are present carious or necrotic areas or cholesteatomata demanding radical treatment. At this point it might be well to add that there is a difference between discharge and moisture, because in the uncomplicated cases, where the tympanic cavity is lined with healthy mucosa, there will be more or less moisture present just as there is more or less moisture from any mucous membrane lined cavity. Only when the tympanum is epidermatized can we expect perfect dryness in the cavity.

In any individual case it would be the part of wisdom to suspect the worst form and make diligent search for any area of granulating tissue, bone necrosis or cholesteatoma. In order to properly make this search, the first requisite is adequate cleansing of the ear, for no judgment is justified until after this first cleansing process. In fact, many complicated conditions can easily be recognized after thoro cleansing which otherwise would have been unsuspected. If, however, no granulating or necrotic area is discovered, one is not yet justified in the assumption that none exists and that the discharge will promptly disappear after proper local treatment to the tympanic cavity. True, we may tentatively treat the case as tho it belonged to the simple uncomplicated variety and base our final verdict on the success or failure of such treatment. If success attends our efforts, well and good.

If, however, the discharge persists, we should direct our attention to the nasal cavity and accessory sinuses, the nasopharynx and the pharynx in order to discover an area of infection which often is the etiologic factor in keeping up a discharge in these apparently simple uncomplicated cases. If, again, the discharge persists after these additional regions have been found healthy or rendered so by appropriate treatment, we may be reasonably sure that one or the other of the more complicated varieties is present, namely, a granulating or necrotic area or a cholesteatomatous formation.

As to the specific treatment indicated even in these more complicated conditions, no rule applies to all. Of course, in the presence of cholesteatomatous formations or labyrinthine or intracranial complications, the radical operation will prove the most conservative procedure in the end, but in the absence of such threatening conditions, more conservative procedures are justified, particularly if the patient can be kept under constant observation.

If the presence of granulating tissue or polypi are discovered, the local treatment successful in the simple uncomplicated cases is doomed to failure. Our first endeavor is to discover the cause of the hypertrophic condition of the intratympanic muscosa. We know that granulation tissue or polypi are the result of an irritation. There are two ways to account for this irritation. In the first place, neglect in carrying out ordinary cleansing measures causes the secretion to stagnate and decompose and this secretion naturally is very irritating. The proper treatment for this condition is removal of the obstructing mass and strict cleansing measures to the ear.

A second factor in the production of this proliferation is the presence of a localized area of bone necrosis, the secretion from which is always irritating. If such a condition is present, a cure cannot be hoped for unless the necrotic area is removed. Frequently these growths spring from the superior posterior portion of the tympanic cavity, showing that the necrotic area is in the aditus, antrum or mastoid cells. Such a condition proves that a simple mastoid operation should have been done during the acute inflammation of the middle ear. However, there may still be time for the simple mastoid operation to effect a cure. At any rate, it should be attempted, especially since the radical procedure can be performed at any subsequent time.

If examination reveals necrotic areas in the recesses of the tympanic cavity, it seems the part of wisdom to perform the radical operation rather than attempt any of the intratympanic surgical procedures such as ossiculectomy. Each case, however, demands its own study and an individual judgment, rendered only after a thoro searching of every area within reach, as well as a complete physical and laboratory examination. This method will be more than justified by the results obtained and some of the apathy toward the treatment of the chronic running ear will be replaced by enthusiasm over the remarkable results obtained.

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REPORT OF A CASE OF CEREBRAL ABSCESS FOLLOWING ACUTE MASTOIDITIS. OPERATION. RECOVERY

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Patient D. V., age 6, referred to me by Dr. C. P Groom, entered the Pocatello General Hospital, Sept. 22, 1922, with the following history. About the first of September or a little more than seven weeks ago, he was taken with an attack of gastritis

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* Read before Utah Ophthalmotogical Society, Salt Lake City, Utah, Feb. 19, 1923.

and vomiting, followed by a slight fever, some indisposition and stiff neck. As the stomach cleared up the right ear began to ache. This continued for about three weeks with exacerbations and remissions. Some days he would feel nearly well, alert, awake and playful. At other times he would be indisposed and complain of the ear aching. During this time the mother noticed large glands in the neck, accompanied by some stiffness when moving the head. These were more marked on the right than on the left side. The family physician was consulted. He attributed the glandular enlargement and the otalgia to an infection of the tonsils and the presence of adnoids. To this end he removed the tonsils and adenoids and two days after the operation the right ear began to discharge. It ran profusely for about ten days. He then developed a severe pain in the back of the head and ear, ran some temperature all the time. These symptoms continued with the pain getting more intense, child getting more toxic and discharge more profuse until the present time.

He had whooping-cough two years ago, scarlet fever one year ago. The attack of scarlet fever was uneventful, other than he had some earache at the time but it lasted only a few days. Four or five months following he had a bad cold in head, his stomach was upset and at that time he had earache for about three weeks. The pain and general symptoms were mild. The ear ruptured once and drained for only a few hours. It then cleared up and went along for about a month. He then had another slight earache in the same ear.

Family history is negative. He is a well nourished, child of average height and weight, somewhat pale and with an anxious expression in face. Heart, lungs, urine, etc., found negative. The right ear is somewhat tilted from the head. In the region of the parotid gland there is a swelling about the size of a hazel nut. The skin and cutaneous tissues over the mastoid are edematous, red, swollen and extremely tender. He has a sagging of the posterior superior wall of the external auditory canal. The tympanic membrane is fairly white, little redness in the posterior half. There is a small perforation in the inferior part. Other ear seems normal. There is a slight redness in the nasopharynx. Tonsils have been removed.

A diagnosis of acute mastoiditis was made. No x-ray was taken because the symptoms seemed so evident. His temperature the first time I saw him was 103°, pulse, 140.

The following morning a simple mastoidectomy was done. Cortex was intact, mastoid cells were large, filled with thick yellow pus. Culture showed staphylococcus. The cells were all thoroly cleaned out, the antrum opened and irrigated. The wound closed after packing with iodoform gauze. At this time he had a leucocyte count of 14,500.

On the following day, or the morning just before operation, temperature had dropped to 100°, pulse to 100, respiration to 20. No nervous phenomena could be discovered other than extreme irritability. The first day postoperative was uneventful, temperature 99.5°, pulse from 124 to 140.

Second day he became more restless, very much perturbed when any one came near. Took no nourishment other than cold water which he asked for frequently. Temperature rose to 101.5°, pulse ranged from 124 to 136. He rested badly, cried out as if he were in pain, was perfectly rational, but it was difficult to find out where the pain was.

On the 24th or third day, temperature went to 102°, pulse from 100 to 118. Could discover no focal symptoms; eyes reacted perfectly; moved arms, legs; facial nerves seemed to function properly. Wound dressed, nothing unusual found, seemed clean and healing nicely.

On the 25th, temperature dropped to 100° pulse ranged from 63 to 106. At this time he had a leucocyte count of 11,100 and I quote from the progress record. "Focal symptoms are manifest this morning; he does not move his left arm and leg as readily as the right, but moves them. His pupils are regular and react."

On the 27th temperature dropped to 99°, pulse from 88 to 112. Hemiplegic symptoms became more pronounced, especially in the hand and foot. He used his shoulder and thigh, toes and fingers somewhat but function was greatly reduced.

On the 28th, temperature was again 99°, pulse from 100 to 114. He lay on his right side with knees toward his chest, irritability was very decided. "Sleeps a greater part of the time when not disturbed." Mastoid wound was clean and progressing uneventfully, external auditory canal was dry. Pupils reacted, regular and equal. Emaciation was marked, constipation obstinate.

Due to the fact that his pulse had dropped, his temperature had also gone down and that he had a decided focal finding in the left side of his body, it was thought that he was developing a cerebral abscess, probably in the temporosphenoidal lobe. A culture taken from the pus showed staphylococci; blood culture was negative. A differential count showed polys 53.3, small lymphocytes 41.6, eosinophiles 1, basophiles 1, transitionals 3.

Accordingly he was taken to the operating room, the mastoid wound reopened and the cranium opened thru the temporal bone. The meninges were seen to pulsate. A crucial incision was made thru the dura and pia. A sharp grooved director was then inserted into the brain substance up to the region of the fissure of Rolando. No pus followed. Patient was undisturbed, iodoform gauze strips were then packed in between the dura and pia and wound left opened. Returned from the operating room in good condition.

The only difference that could be noted after the operation was that his pulse was some higher between the day of the last operation and Nov. 3, or three days later. Temperature ranged between 97° and 99°, pulse from 80 to 140. On the first of November—"Removed the dressing from the brain this morning. Considerable reaction followed in the way of dilated pupils, increased pulse and great fear. The paralytic condition seems to be improving. His symptoms are now more meningeal than cerebral." November 2, "Paralysis considerably improved, his grip is better, he moves his finger and toes some. The wounds are secreting small amount of pus." November 3, "Wound healing rapidly, external auditory canal entirely dry. Paralytic condition is clearing up. Is less irritable. Beginning to take more nourishment and not so constipated."

From the fourth to twelfth, the day of his discharge from the hospital, his improvement was rapid in every respect. While he had but little grip in the hand and fingers, he would move each joint separately and all functions were returned. Due to the fact that the mother was very anxious to return home, he was referred back to family physician.

Child continued to improve rapidly. The forepart of December mother writes me that he is feeling fine in every way, other than he had quite a little "hitch" in his walk. The last time I heard from him he was feeling entirely well. His mother thinks his condition is entirely normal. However, if an examination were made even now, probably some weakness in the paralytic leg and arm would show itself.

Spinal puncture was not done. I felt rather fearful in that there was a possibility of deepening the infection. During both anesthesias the fundi oculi were examined and found normal.

I am by no means certain that the patient here reported had an abscess of the brain. He could have had an area irritated by infective material which caused only disturbance in motor function; he could have had a subdural invasion in the Rolandic area, which for the leg and thigh lie high up and behind, for the hand, arm, thumb and fingers lower and in front. This was probably what he did have. I feel certain he did not have an encysted abscess, since there was none discovered at operation, and the length of time from his first symptoms until the operation was too short for encapsulation. There was no herniated mass coming from the uncovered portion of the cranium, during the postoperative period. However, pus came from this wound for several days, following the last operative procedure which I considered was secondary infection from the mastoid wound which was not sterile at the time it was operated on again.

I feel sure he did not have a sinus thrombosis. His symptoms were not those of sinus infection. His leucocytes were more in keeping with an abscess. His localizing signs were hemiplegia in left arm and leg with fingers and toes, hand and foot more than arm and thigh. At no time did he have any choked disc, facial or tongue disturbances. His pupils were probably more dilated than they should have been but were always active. He had no meningeal symptoms. He did have a marked irritability when aroused but undisturbed he lay on his left side in a curled up position. He lost weight rapidly, was markedly constipated, had no appetite, pulse was slow, temperature normal or subnormal. If he had headache or other painful phenomena, I was unable to elicit it. I entered the mastoid antrum with probe as carefully as I could. However, I did use a small currette to make a larger communication from the mastoid to the antrum.

If you will recall the early history, at one time following scarlet fever he had an earache for about three weeks, then rupture, discharge a few hours, then stopped. Probably he had some activity all the time in the middle ear or the mastoid antrum. Thus the wall of the tegmen may have been acted upon long before the operation. I then washed the antrum with sterile normal saline solution, followed by alcohol in a pressure syringe, which came thru the external auditory canal.

Did I rupture the tegmen and start the infection thru the brain? Such could be possible, but I am inclined to think that he had the condition when I first saw him. Had he been older and had an experienced neurologist examined him at the time, one could surely have felt more satisfied.

PRACTICAL POINTS IN THE DIAGNOSIS OF CARDIAC DISORDERS*

George H. Anderson, M. D.
SPOKANE, WASH.

Diagnosis of heart disease consists, as in any other type of disease, of an evaluation of the symptoms and signs obtained by the history and examination of the patient. The stethescope, sphygmomanometer and other instruments today used in cardiac diagnosis have each in turn been heralded as being an unfailing means of increasing our efficiency in the study of heart disorders. Unfortunately the enthusiasm manifested with the introduction of a new method of observation led many physicians to make unwarranted claims for them, which lead to much confusion in the interpretation of the observations made. This has been especially true of the stethescope, since with its advent systematic auscultation of the heart has been instituted and heart murmurs discovered. Long before their various causes were known it was thought that all murmurs were evidence of serious heart disease. Even at the present time, despite the newer teaching and the knowledge that a great many murmurs heard over the heart are not associated with organic disease, physicians continue to make a diagnosis of valvular heart disease whenever a murmur is heard. Too often a thoughtless prognosis based upon such diagnoses unnecessarily relegates the victim to the life of an invalid.

The chief difficulty in cardiac diagnosis is the differentiation of true cardiac disease and functional disorders. A history may be of great importance in the analysis of heart disorders, especially when it is a question of differentiating between them. The multiplicity of the symptoms enumerated by the patient with the functional cardiovascular disorders is in itself suggestive, if not sufficient at times to rule out organic disease of the heart.

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* Read before the Inland Empire Medical Society, December 12, 1922, Lewiston, Ida.

Organic diseases of heart are, as a rule, without many symptoms except when decompensated. A typical train of symptoms in the functional disorders is pain over the heart, dizziness, fainting spells, shortness of breath, weakness, sleeplessness, "poor circulation" and excessive sweating, particularly of the hands, feet and in the axilla—vagotonic phenomena. These, of course, vary in severity and their mode of production. For example, such symptoms may be brought on by exertion or by various emotional or nervous states. As a rule complaints of a patient suffering from organic heart disease are very few, unless the heart is decompensated. However, symptoms similar to those seen in functional heart disorders may occur in organic heart disease.

The past history may reveal illnesses of etiologic importance. Rheumatism, as well as chorea and tonsillitis are so frequently complicated by organic heart disease that we must always consider the possibility of cardiac damage when a patient gives a history of these illnesses. Since the term rheumatism is used by the laity to designate all sorts of aches and pains, it is best to inquire into them carefully. Pneumonia, diphtheria, scarlet fever or any other acute infection at once suggest possible heart damage, while a syphilitic history should make one search carefully for aortic disease. Functional, or at least non-classifiable cardiovascular disorders so frequently follow influenza that they are to be suspected, whenever peculiar heart symptoms follow that disease.

It has been pointed out that a certain class of individuals, so called "constitutional inferiors" who frequently come of poor stock and are mentally sluggish, are very prone to develop neurocirculatory disorders. Hence the importance of determining and interrogating the patient as to his ancestors, his aptness in school or his ability to successfully hold employment.

It is unnecessary, in a paper of this sort, to mention the importance of routine methods in the diagnosis of heart disease, but it is well to bring out a few helpful measures in the interpretation and the evaluation of the abnormal findings which were formerly considered evidence of grave heart disease and, unfortunately, are still so evaluated in many instances.

Upon hearing a murmur, the examiner usually endeavors to time its occurrence in the cardiac cycle, its point of maximum intensity and, if transmitted, the direction. This is as it should be. There are several other procedures which must be carried out before the examination is complete. The effect of respiration upon the presence or intensity of the murmur should be noted. As a rule organic murmurs are heard best upon complete expiration. If the murmur in question is not heard at this time, it is almost certainly functional. There are a number of nonorganic murmurs produced during certain phases of respiration, the exact mechanism of which is not understood. Such murmurs are chiefly systolic in time. The well known rough murmur at the pulmonic area is seldom mistaken for organic disease. There are in addition a great many murmurs heard at the apex that are misinterpreted. These are heard chiefly during mid-phase of inspiration. Diastolic cardiorespiratory murmurs occur but are very rare.

Various postures of the patient are of value in the discovery and evaluation of indistinct and hidden murmurs. For instance, murmurs due to damage of the mitral valve, as a rule, are best heard when the patient is lying on his left side. It is not uncommon to have a murmur, which is barely perceptible in the sitting position, rendered distinct by having the patient lie on his left side. We have examined several cases of mitral stenosis in the upright position, in which the only significant finding was an accentuation of the first sound, to which was added a definite crescendo presystolic murmur when auscultation was practiced with the patient on the left side.

A word of caution in pointing out another source of error in the diagnosis of mitral stenosis could well be given here. Frequently a rumble is heard at the apex, due to the impact of the heart against the chest wall. This can further be accentuated and made to simulate the presystolic murmur of mitral stenosis by placing the bell of the stethescope on the chest in such a manner that it bridges between two ribs, thus permitting accentuation of the vibration of the chest wall. To obviate this the bell of the stethescope should be placed in such a manner that one edge rests in the interspace.

Murmurs due to disease of the aorta or aortic valves are best heard with the patient in a sitting position and still better with the patient leaning forward. It must be remembered that such murmurs are often heard better in the third interspace just to the left of the sternum, than over what is ordinarily considered the aortic area. Diastolic murmurs due to aortic insufficiency more than any other type of murmur are best heard during complete expiration. Very often murmurs, which would be overlooked with the patient recumbent or sitting erect, are made much more definite by auscultation during complete expiration, the patient leaning forward.

To many the most puzzling feature of heart diagnosis is the proper classification of an irregularity without the use of graphic instruments. Altho the basis of proper classification of irregularities rests upon graphic means, the greater majority can be practically classified by auscultatory methods.

Sinus arrhythmia, the type of irregularity seen so commonly in children and young adults, is due to disturbances of the rhythmic impulses at their point of origin. Respiration is by far the most common source of interference of normal activities of the pacemaker, the disturbing impulse reaching it by way of the vagus nerves. Swallowing is another cause. Recognition is simple. An increase of the heart rate will be found with inspiration and a decrease with expiration, a waxing and waning of the pulse, as Lewis puts it. Such an irregularity occurs when the pulse is relatively slow, therefore the increased rate of exercise will cause it to disappear.

Extra-systoles would be better understood, if their other name, premature contractions, was constantly applied. They are the result of stimuli arising outside of the normal pacemaker. As a rule auscultation will suffice to make a diagnosis. One hears the two sounds hurriedly executed just after the normal sounds, to be followed by a corresponding longer pause, as two extra steps might be heard when an individual stumbles while walking. Occasionally the extra-systoles are so timed that they may occur in pairs or groups, types which may cause some difficulty in recognition. Since extra-systoles do not occur in rapid hearts, the exercise test again is of value in their recognition. Extra-systoles may be present in mild cardiac disorders, for example, those due to nicotine or caffeine. They do not make the prognosis of a given organic disease more grave when they are present. That they may occur in trivial heart disorders have been demonstrated to insurance companies by their experience. Some of the strictest companies accept applicants when this is the only finding.

Auricular fibrillation is the most common serious type of irregularity. In this disturbance the fibers of the auricle fail to contract as a unit, the auricle being in a state of diastole. Every fiber partially contracts independently of its neighbor in time and degree, each acting as its own pacemaker. The innumerable stimuli resulting make an effort to reach the ventricle thru the bundle of His. The bundle of His, however, in a protective way blocks the weaker stimuli from going thru. The stronger fibrillary contractions in a disorderly acting auricle are irregularly spaced; consequently the auricle becomes an irregular pacemaker for the ventricle. Auricular fibrillation is the type of irregularity seen commonly in badly decompensated hearts with general anasarca, dyspnea, and particularly when secondary to mitral stenosis.

This irregularity should be recognized with little difficulty by the ordinary means of examination. The pulse is totally irregular, the beats ever changing in time, amplitude and strength. Auscultation gives added information. One hears a rhythm that was formerly called delirium cordis. In contradistinction to the irregularities given above, exercise will tend to make the heart more irregular as the rate increases. It may be accepted as a law that, if the heart rate is 120 or over and irregular, the irregularity is always due to auricular fibrillation.

Other disturbances of rhythm, such as auricular flutter, simple paroxysmal tachycardia, heart block and pulsus alternans may be suspected by one who has long studied graphic methods, but their disordered rhythm is so complicated that absolute recognition is possible by graphic means only.

Chronic Purpuric Eruption Without Demonstrable Blood Changes. In the case reported by John H. Arnett and Fred D. Weidman, Philadelphia (Journal A. M. A., April 21, 1923), the principal findings were long-standing cutaneous hemorrhages, a positive tourniquet test for capillary permeability, a normal platelet count; while histologic sections of the skin showed acute telangiitis. The first three were sufficient to indicate the telangiitis, which the latter proved. In the absence of general vascular disease, the acute inflammatory changes in the skin pointed to the highly selective nature of the causative agent.

NEW ADVERTISEMENTS

Attention is called to the following new advertisements in this issue. The Laboratory Products Company (page 31), presents a baby food adapted to babies and young children. Graduate Medical Lectures of University of Washington are listed on page 13. Geo. T. Mack & Co. (page 188), offer a list of prescription specialties.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 323 Cobb Building, Seattle, Wash.
MAY, 1923

SERUM FOR ROCKY MOUNTAIN SPOTTED FEVER

At the annual meeting of the Southern Idaho District Medical Society, held at Boise last month, an account of which will be found under the reports of medical societies, an epoch-making announcement was made by Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research. For some time he has labored to discover a preventative serum to be used in connection with Rocky Mountain spotted fever. At this meeting he announced the perfection of such a serum, which has proven to be an absolute preventative of the disease. Fourteen days after vaccination the individual becomes immune to spotted fever. At the same time he announced the perfection of another serum which is a curative, if administered within twenty-four hours after the individual has been bitten by an infected tic. This is one of the wonderful medical discoveries of the present day and will prove one of the greatest blessings for the residents of the mountain states of the West, where this disease has become endemic. It is announced that within a short time the serum will be available for use in all regions where the disease prevails.

Proof that men still exist who are willing to risk their lives to demonstrate the efficacy of a new discovery to combat disease, was exhibited in the recent experience of Dr. Noguchi, at Missoula, Mont. While he had proven to his own satisfaction, by experiments on the lower animals, that this serum would prevent and cure spotted fever, it had not as yet been demonstrated on humans. Desiring subjects on whom the effect of the new serum might be proven, he approached a gang of Japanese section hands at work on the railroad. He explained that he wished to inoculate them from infected tics, which would surely produce spotted fever, but he was confident that his serum would prove curative. The whole gang of nine men at once consented to inoculation. Altho this action may be considered evidence of their confidence in their distinguished fellow-countryman, yet these humble laborers were potential heroes, willing to be sacrificed on the altar of science, whose identity would remain unknown to posterity.

OSTEOPATHS CANNOT PRACTICE MEDICINE AND SURGERY

An osteopath, practicing in Twin Falls County, Idaho, was convicted of practicing surgery without a license, following the performance of appendectomy, after prosecution in the superior court. An appeal to the state supreme court resulted in confirmation of this verdict. The decision states that the holder of a license to practice osteopathy in Idaho is not authorized to practice medicine and surgery. The full text of the decision follows:

Appellant was convicted of practicing medicine and surgery without a license, with the intent of receiving compensation therefor. The operation performed consisted of making an incision into the abdomen of a human being and removing the appendix. It was shown that the appellant did not have a license authorizing him to practice medicine and surgery, but held a license authorizing him to practice osteopathy.

That the legislature has power to prescribe the qualifications for those engaged in the practice of medicine and surgery, or either, and to prohibit or penalize such practice by one not possessing such license, is not open to doubt. State v. Johnson, 84 Kan. 411, 114 Pac. 390, 41 L. R. A. N. S. 539; Brag v. State, 134 Ala. 165, 32 So. 767, 58 L. R. A. 925.

In 1899, the legislature of this state enacted a law regulating the practice of medicine and surgery. This law was substantially the same as Title 16, Chap. 90, of the Compiled Statutes. By C. S. 2105, it is provided that every person, except as otherwise provided by law, desiring to commence the practice of medicine and surgery, or either of them, within the state shall show certain educational qualifications and submit to an examination. C. S. 2112 contains the definition of the practice of medicine and surgery, or either. The statute also makes it a misdemeanor for one to practice medicine and surgery who has not obtained the requisite license.

In 1907, the legislature passed an act regulating the practice of osteopathy which is now chapter 92 of the same title in the Compiled Statutes. This statute provides that a successful applicant shall receive "a cerificate granting him or her the right to practice osteopathy in the State of Idaho." Unless, therefore, the term "osteopathy" is broad enough to comprehend surgery, or in other words, unless the practice of osteopathy includes the practice of surgery, the statutory prohibition of the practice of medicine and surgery, except by one who has obtained the license to practice medicine and surgery as prescribed by Chapter 90, still prevails.

The New Standard Dictionary of the English language defines osteopathy as follows: "A system of treating disease without drugs, propounded by Dr. A. T. Still, 1874. It is based on the belief that disease is caused by some part of the human mechanism being out of proper adjustment, as in the case of misplaced bone, cartilage, or ligament, adhesions or contraction of muscle, etc., resulting in unnatural pressure on or obstruction to nerve, blood, or lymph.

Osteopathy * * * seeks to adjust correctly the misplaced parts by manipulation."

In the case of State v. Johnson, supra, quoting six words and phrases, p. 5070, osteopathy is defined as "a method of treating diseases of the human body without the use of drugs, by means of manipulations applied to various nerve centers—chiefly those along the spine—with a view to inducing free circulation of the blood and lymph, and an equal distribution of the nerve forces. Special attention is given to the readjustment of any bones, muscles, or ligaments not in the normal position."

Osteopathy, therefore, we are justified in concluding from the foregoing and similar definitions, is a system of treating diseases of the human body without drugs and by means of manipulation. **The word "manipulation" certainly does not cover and include the practice of surgery in any form.** Since, therefore, the term "osteopathy" does not include medicine and surgery within its content, we conclude that it was the legislative intent that a license to practice osteopathy does not carry with it the right **to practice medicine and surgery, or either of them.**

The appellant sought to show that the standard and accredited colleges of osteopathy include medicine and surgery as a part of their curricula; that the science or practice of osteopathy contemplates and comprehends the practice of medicine and surgery; that the colleges of osteopathy use the same textbooks on the practice of medicine and surgery that are used in the best recognized medical schools and devote as much time to the subject as is consumed in the best allopathic colleges in this country. The trial court refused to receive such evidence. In this it did not err.

The evident purpose of the proposed evidence was to show that graduates of recognized and accredited colleges of osteopathy now possess the requisite knowledge and kill to engage in the practice of medicine and surgery. The only question here is as to whether the applicant possessed the statutory qualifications; his actual qualifications were not in issue. The evidence was therefore irrelevant.

If it be true that graduates of colleges of osteopathy possess the requisite knowledge and skill to enable them to practice medicine and surgery, it would suggest the propriety of bringing the facts to the attention of the legislature with a view of obtaining legislative action granting to osteopathic physicians upon proper examination, the right to practice medicine and surgery as well as osteopathy.

The judgment must therefore be affirmed, and it is so ordered.

SOME INTERESTING FACTS ABOUT THE SEATTLE MEETING

In addition to other features, already announced for the meeting at Seattle, June 19-21, the program committee of the Pacific Northwest Medical Association has secured Dr. K. F. Wenckebach, Professor of Medicine at Vienna, to give two lectures on diseases of the heart. This addition to a program already superlative in its excellence comes as a very pleasant surprise. Doctor Wenckebach has been Professor of Medicine in Holland for many years, and several years ago succeeded Professor Von Noorden in the first medical clinic in Vienna. He speaks English well, and is an international authority on diseases of the heart. This feature of the program, together with the papers by Drs. Frothingham and Peabody on cardiac disturbances, will cover this subject most excellently and authoritatively.

This program is worthy of further comment. The subject of syphilis will be considered in a most thoro manner. The skin lesions will be discussed by Dr. Ormsby, whose incisive, exact method of teaching is well known. While his paper will be on skin lesions primarily, the diagnosis in general will be discussed. Dr. Frothingham will take up the subject of visceral syphilis, pointing out the importance of the lesions produced by the spirochetes and call attention to the fact that the prevalence of this disease is not sufficiently understood. The importance of distinguishing between lesions, the result of activity, and those dependent upon scars of previous lesions is equally necessary for appropriate therapeutic measures.

The symposium on diseases of the chest is in authoritative hands, and is an excellent feature, both timely and important. Professor H. Gideon Wells' series of lectures on cancer, taking up the entire subject from statistics and etiology, thru comparative pathology, biology, immunology, chemistry and therapy, will give us the last word on cancer. Vital capacity and its relationship to cardiac and pulmonary disease will bring out many important diagnostic measures, all too little used in the West. The subject of diabetes will be ably discussed by Dr. J. B. Collip, of Edmonton, Alberta, and Dr. R. T. Woodyatt, of Chicago. Dr. Collip is the biochemist who collaborated with Banting and Best in their work on insulin, and it was he who suggested the means of isolating the active principle of the islands of Langerhans. Dr. Woodyatt will present much of clinical importance on this subject. Dr. Walter Timme's lecture on "The Relation of Neuropsychiatric States to Early Status Thymico-Lymphaticus," will present a unique angle of the subject. Kidney diseases were well presented last year by Dr. Henry Christian, but new angles will be given this year by Dr. Longcope's review of the functional kidney tests and their value in the diagnosis and treatment of these diseases. Protein sensitization, a subject still in its infancy in the field of therapy, will be ably discussed by Dr. Longcope, supported by Dr. Duke, who will present a paper on "Allergy as a Common Cause of Illness."

A bit of new research work will be presented by

Drs. E. A. Graham and Duff S. Allen, of St. Louis, on intracardiac surgery. While the surgical numbers on the program do not take up the hackneyed field of abdominal surgery from the standpoint of operative technic and statistics, this is to be rather commended than otherwise, for most programs are teeming with that sort of papers. Dr. D. D. Lewis will present a paper on the lesions of the breast, their diagnosis and treatment. This will be a valuable repetition of a subject so ably discussed by Dr. Bloodgood last year. Dr. Lewis will, no doubt, present a somewhat different viewpoint from Dr. Bloodgood, but it will be as interesting, and perhaps more of a clinical lecture as compared with that of Dr. Bloodgood, who presented pathology chiefly. Dr. Gordon B. New's discussions on "Actinomycosis of the Head and Neck" and "Plastic Operations of Acquired Deformities of the Face and Neck" are types of papers little heard but important nevertheless.

Fundamental subjects in physiology are presented all too rarely. Professor A. J. Carlson, of the University of Chicago, will deliver three lectures on physiology of the alimentary canal, of the visceral sensory nervous system, and organotherapy. Dr. Carlson is one of the foremost teachers of physiology today. A most excellent program in pediatrics has been arranged, in which Dr. A. H. Byfield, Professor of Pediatrics in the University of Iowa, Dr. H. F. Helmholz, of the Mayo Clinic, and Dr. Julius Hess, of the University of Illinois, will present papers. A valuable feature of the program will be lectures given to the public on the Monday night preceding and the first night of the meeting.

Focal infection, that ever-present and all-important subject, will be discussed by Dr. E. E. Irons, of Chicago, and the viewpoints of a pediatrician, Dr. A. H. Byfield, will supplement his paper by giving the findings in childhood. Dr. A. Sachs, of Omaha, will present an important paper on the diseases of the colon. Finally, Dr. George E. Shambaugh, Professor of Otology, at Rush Medical College, will give three fundamental lectures in this specialty, one on clinical problems of suppurative otitis media, and one each on the structure and function of the acoustic labyrinth and the structure and function of the end organs of the semicircular canals and vestibule. Dr. Shambaugh's standing in the otologic field is too well known to need comment. This meeting should be one of the high lights of medical education in this country this year.

Physicians who attended the 1921 and 1922 meetings of the Pacific Northwest Medical Association in Portland and Spokane, need no urging to be present at this Seattle meeting. The success of the two former meetings established the association in the medical life of the Northwest. The large number of speakers and their eminence indicate the high esteem the association enjoys thruout the profession in the East. The officers are exerting every effort to make the Seattle meeting a pace-maker. It will be a miniature A. M. A. meeting. Arrangements include commodious headquarters, affording registration facilities, telephone service, general information and an exhibitors' section, sectional meetings in centrally located auditoriums and a scientific program exceeding in merit any before presented in the Northwest. The management is anxious to have membership fees paid immediately, so that they may better perfect arrangements. Estimate as to probable attendance is essential for budget purposes. All who expect to attend are requested to remit the fee of $10 at their earliest convenience to Dr. Homer D. Dudley, 403 Cobb Building, Seattle. Membership cards will be mailed to them.

UNIVERSITY EXTENSION COURSE PROGRAM

The seventh course of the University of Washington Graduate Medical Lectures, to be delivered in Seattle, July 16-20, will be finer than ever and of such interest that no physician in the Northwest can afford to miss it. The series of lectures on newest advances in medicine and surgery will give the physician of this section an opportunity at home for what he would otherwise need to make a trip to Eastern clinics to secure and at an expense of time and money.

Some changes in the program will be made this year. There will be three morning lectures at the University; medical, surgical and specialists clinics at the various hospitals from 2:00 to 4:00 p. m.; lectures down town from 4:30 to 6:00. Lectures will be arranged for several evenings. A public health lecture will be given in Frederick and Nelson's auditorium and other new innovations are considered. The general banquet will be on Monday evening, July 16, at the Rainier

Club. The various alumni gatherings with their banquets will be on Tuesday evening.

No man who pretends to do up-to-date surgical work can afford to miss the lectures of so eminent a teacher as Prof. John T. Finney, professor of surgery at Johns Hopkins University Medical School. His fame as a surgeon and his well-known ability as a teacher will make his course worth more than the cost of the lectures. Dr. Alfred Stengel, professor of medicine at the University of Pennsylvania, will give the lectures on medicine. He is the author of well-known books and a recognized authority on medicine. Dr. Oliver S. Ormsby, professor of dermatology at the University of Chicago, will give a series of five lectures of vital interest to men in every branch of medicine. Dr. E. C. Rosenow, of the Postgraduate School of the University of Minnesota, will give a course on progressive and experimental medicine, showing recent advances in scientific medicine.

Any physician who misses this course is not doing himself or his patients justice. The many inquiries from neighboring towns and cities indicate that the attendance will be larger than ever before. The program will be so varied and of such wide scope that all will be assured of a profitable session, and something of vital interest in their practice. Not only are the lectures of great value, but the opportunity of meeting the progressive men of the Northwest and of associating with leaders of the profession in this country for five days is worth while.

THE IDAHO ASSOCIATION MEETING

The annual meeting of the Idaho State Association will be held at Idaho Falls, June 13-14. While the program has not been completed, the following well known members of the profession will appear on it. Drs. Evarts A. Graham, of Washington University; W. W. Duke, Kansas City, Mo.; J. E. Rush, New York City; W. C. MacCarty, of The Mayo Clinic; Charles R. Scott, Twin Falls; Arthur C. Jones, Boise. Several other Eastern men have promised to be present, whose names will appear on the completed program. The Idaho Falls County Medical Society is making extensive plans for entertainment. One project is a trip thru Yellowstone Park, so arranged that those in attendance may have ample time to attend the meetings of the Pacific Northwest Medical Association, in Seattle, and the A. M. A., in San Francisco.

PROGRAM OF THE UTAH MEDICAL ASSOCIATION

The twenty-ninth annual meeting of the Utah State Medical Association will be held at the University of Utah, Salt Lake City, June 20-22. The sessions will be held in the amphitheatre which has a seating capacity of two hundred, is well lighted and equipped for lantern slides.

The following well-known members of the profession have accepted invitations to be present. Drs. John F. Erdman, of New York; Henry S. Plummer, Rochester, Minn.; Vilray P. Blair, St. Louis; J. M. Dean, State University of Iowa; Albert I. Ochsner, Chicago; Herman L. Kretschmer, Chicago; J. E. Rush, American Society for the Control of Cancer, New York. Other speakers are expected and it is probable that Drs. Alfred Stengel, of Philadelphia; Nathaniel Allison, of St. Louis; Nellis B. Foster, of New York, and Joseph F. McCarthy, of New York, will also be present. This is expected to be the biggest meeting the association has ever held.

The annual banquet will be held at the Hotel Utah, probably on the roof garden, Wednesday evening, June 20. The president's address and toasts from the speakers will be important features of the banquet. The House of Delegates will meet at noon of the first day and two other meetings of the House will be arranged during the convention.

MORE SILLY CRITICISM

Controversy with a contemporary is unprofitable. It is a waste of valuable space, which might otherwise be utilized to advantage. Our apology for following this objectionable procedure at this time is the renewed attack on our advertiser, The Medical Protective Company, of Fort Wayne, which appeared in a recent issue of *The Medico*. This self-appointed censor of things medical and otherwise has again displayed his ignorance of insurance matters, with which one should familiarize himself before engaging in such public criticism. A state requires a license to be obtained by an insurance company which establishes agencies or personally solicits business within its borders. This requirement does not apply to business conducted by correspondence. Many insurance companies carry on more or less of their business in this manner, including states where they are not licensed. In fact, one large national company does most of its business thus by correspondence.

Instead of being an "outlaw," as charged by this critic, our company is strictly within the legal requirements in the manner in which it conducts its business in the states represented by this journal. The legality of an insurance company doing business by correspondence where it is not licensed has been established by a very large number of decisions, emanating from State, District Federal and U. S. Supreme courts. The Medical Protective Company's advertisement is carried in twenty-eight association journals, and it has appeared for fifteen years in the *Journal of the A. M. A.*, which circulates in the same territory as NORTHWEST MEDICINE. Similar advertisements of insurance companies are carried by national magazines which circulate under similar circumstances in all of the states. These statements can be verified by consulting the officials of any insurance company.

This company originated medical defense insurance and has conducted this business for nearly twenty-five years. It has successfully defended a large number of malpractice suits, has never defaulted in a contract, has never been attacked by a policy holder, and enjoys the confidence of the medical profession of the country. There is no justifiable ground whatever for these malicious criticisms which have been made against it. Whenever one assumes the roll of Don Quixote and goes tilting at windmills, he only makes himself ridiculous and accomplishes nothing.

MEDICAL NOTES

OREGON

Improvement of Hospital Contemplated. A hospital committee from the city organizations of Marshfield has been appointed to make plans for the building of an addition to the Smedberg Sanitarium of that city, in order to provide increased hospital facilities. It is estimated the addition will cost about $25,000.

Hospital Difficulty. Last fall a campaign was carried on in Salem for the collection of funds to construct the first unit of a hospital to accommodate about fifty patients. At present the work is at a standstill on account of the deficient payment of some of the subscribers. When completed, the building will have cost over $100,000. It is supposed that the work will soon be resumed and the institution completed.

Sale of Hospital in Doubt. The decision between the directors of the Hahnemann Hospital of Portland, and the officials of the Veterans' Bureau, has not yet been made. It is probable that the government's offer will be declined. This offer is for the purchase of the hospital for $175,000, while the original price of the hospital board was $300,000. It does not appear as if a satisfactory agreement can be reached regarding the purchase of the institution.

Polk-Yamhill-Marion County Medical Society held its annual meeting Jan. 23. The following officers were elected for the ensuing year: President, Dr. F. H. Thompson, Salem; Secretary, Dr. C. W. Southworth, Salem.

Resigned from Medical School. Dr. Ernest F. Tucker, of Portland, has resigned as professor of gynecology in the University of Oregon Medical School. He has been connected with the institution for thirty-one years, beginning as clinical lecturer on gynecology in 1892. In 1896 be became professor of general and descriptive anatomy. Since 1898 he has been professor of gynecology and is head of that department. He will continue as emeritus professor and present lectures on special subjects. Besides devoting time to private practice, he will be particularly interested in his duties as regional chairman of the American Society for the Control of Cancer.

Dr. R. B. Miller has recently located in La Grande. For the past twelve years he has practiced in Seattle and Portland.

WASHINGTON

Efforts to Abolish Rabies. In an effort to stamp out rabies in Eastern Washington, the Director of Agriculture has undertaken to administer the Pasteur vaccine to all dogs in Yakima, Burton and Kittitas Counties. Last year twenty persons were forced to undergo treatment in these counties after having been bitten by rabid dogs or coyotes. The disease is said to be transmitted by rabid coyotes biting dogs. In the past fifteen months, state and federal hunters have killed 2,200 coyotes in these counties. Last year 600 were found to be rabid.

New Hospital Opened. The new Friday Harbor Hospital was opened last month. It is located in a transformed residence and is under the management of two nurses. It will accommodate eight to ten patients.

New Hospital Completed. The Cascade Sanitarium, at Leavenworth, has been renovated and has been opened to the public. This takes the place of the community hospital which at one time was under consideration.

Director of Child Hygiene Department. Dr. Herbert E. Coe, of Seattle, has been appointed director of the department of child hygiene for Washington, which has been created by reason of the Sheppard-Towner maternity and infant aid act. He will be assisted by a supervising nurse. For the present the work of this department will consist of a survey of the state to determine where and how aid shall be extended to mothers and infants. The recent legislature appropriated $10,000 for this purpose for the coming biennium, which will make available the government appropriation of $20,000.

Promoted in Rank. Maj. Geo. B. Story, commanding officer of the Cushman Hospital, Tacoma, has been promoted to the rank of Lieut.-Col. He has been in charge of the Cushman Hospital since its institution in July, 1920. Since its opening fifteen hundred veterans have received medical and surgical attendance.

Elected Head of Institution. Dr. Eva St. Clair Osburn, of Tacoma, was elected president of the White Shield Home. This will be the tenth year that the doctor has served in this capacity.

Wins Damage Suit. Dr. R. T. Congdon, of Wenatchee, was a successful defendant in a damage suit last month, in which $60,000 was demanded for injuries alleged to have been caused by an x-ray burn.

The Cowlitz County Medical Society held a meeting at Woodland, April 6. The following officers were elected for the ensuing year: Pres., E. C. Hackett, Kelso; Vice-Pres., Dr. K. W. Berry, Kelso; Sec'y-Treas., Dr. L. S. Roach, Kalama. Dr. Norris, of Castle Rock, was elected delegate to the state association, Dr. Hoffman, Woodland, alternate.

Whatcom County Medical Society held its monthly meeting at Bellingham, April 10. The paper of the evening by Dr. Geo. Cook was on endocrines.

Medical Wedding. Dr. John H. Brodrecht, of Tacoma, was married April 11 to Miss Lola M. Titus of that city.

IDAHO

Plans for Detention Hospital. At a recent meeting held in Boise, of representatives of Ada, Gem and Canyon Counties, plans were made for a venereal detention hospital at some central location. It is proposed that all three counties share in the expense of the hospital, which it is expected will be in operation within sixty days. No present emergency exists for such an institution any greater than heretofore, but to protect the health and morals of the district it is believed such a hospital should be maintained.

Annex to Hospital Finished. The new annex of St. Josephs Hospital, at Lewiston, has the first two floors completed and in use. It provides for seventeen patients. It is expected soon to furnish the remaining three upper floors.

New Health Officer Elected. Dr. W. P. Habel, of Lewiston, has been elected health officer by the city council, to replace Dr. F. T. Harris, resigned. Dr. Habel has recently been connected with the U. S. Indian Agency at Ft. Lapwai.

Appointed Prison Physician. Dr. R. J. Cluen, of Boise, was last month appointed prison physician at the penitentiary, in place of Dr. Geo. Collister, who has been prison physician for more than thirty years.

Meeting of Medical Board. The medical examining board met at Boise, April 2. Five applicants appeared for examination. Dr. Geo. F. Ashley, of Montpelier, was appointed to the board by the governor. The other members are Drs. F. M Caldwell, F. A. Pittenger, Boise; Dr. C. R. Scott, Twin Falls; F. G. Wendle, Sandpoint.

OBITUARIES

Dr. Chas. M. Chambliss, of Rosalia, died at Spokane, Wash., March 29, from cardiac disease. He was born at Marian, Ala., in 1853. He graduated in medicine at Kansas City in 1878, subsequently serving as intern in the City Hospital. He first practiced at Bozeman, Mont., until 1883. He located in Spokane in 1902. For two years he served on the city board of health. He served a term as president of the Montana State Medical Association.

Dr. William McHarrie died in Seattle, Wash., March 27, while undergoing an operation which disclosed that he was suffering from brain tumor. He had been in a semi-stupor for six weeks, his condition suggesting encephalitis lethargica. He was 59 years of age, born at Stronber, Scotland. He came to America at 17 years of age. For a number of years he practiced at Fargo, N. Da., coming to Seattle in 1902, where he practiced until his death.

REPORTS OF SOCIETY MEETING

OREGON

POLK-YAMHILL-MARION SOCIETY

Pres., F. H. Thompson Sec'y, C. D. Southworth

The Polk-Yamhill-Marion County Medical Society held its monthly meeting at Salem, April 17. The meeting was at the Spa for 7 p. m. dinner.

The following papers were presented:

Surgical Technic in the Correction of Depression of the Malar Bone, by Dr. M. C. Findley, Salem.

Pathology of Eustachian Tube a Menace to Hearing, by Dr. F. E. Brown, Salem.

Obscure Headaches of Nasal Origin, by Dr. L. O. Clement, Salem.

Some Problems of Refraction, by Dr. B. L. Steeves, Salem.

WASHINGTON

GRAYS HARBOR COUNTY SOCIETY

Pres., O. R. Austin, Sec'y, C. M. Young

A regular meeting of Grays Harbor County Medical Society was held at Aberdeen, April 18, with President O. R. Austin in the chair. After dinner minutes of last meeting were read and approved.

Diagnosis and Treatment of Retrosternal Goiter. Dr. John Hunt gave an address on this subject, illustrated with lantern slides.

Anesthesia. Dr. John Lundy, of Seattle, gave an address on this subject, illustrated by lantern slides of graphic charts.

It was voted that an invitation be extended to the Industrial Insurance Board to have some of its executives attend the next meeting to discuss insurance matters.

Officers elected for the ensuing year are follows: President, O. R. Austin, Aberdeen; Vice-President, J. H. Fitz, Montesano; Secretary-Treasurer, C. M. Young, Aberdeen; Censors, E. R. Ahlman, Hoquiam; L. L. Goodnow, Aberdeen; A. J. McIntyre, Hoquiam; Delegate to state meeting, G. E. Chamberlain, Aberdeen; alternate, A. J. McIntyre, Hoquiam.

KING COUNTY MEDICAL SOCIETY

Pres., C. E. Haggard; Secty., R. F. Hain

The General Meeting of King County Medical Society was held Monday, April 2, 1923, at 8:10 P. M. in the Public Safety Building, Seattle.

Mr. W. A. Irwin gave his talk entitled, "Seattle." Citizens unconsciously pass detrimental remarks concerning our scenic city which frequently interfere with individuals who come here to make this their home.

Dr. G. H. Sparling, King County Health Officer, spoke regarding the work being done by the King County Health Department and objected to the proposed plan of the county commissioners for the coming year. On motion of Dr. E. W. Young the Secretary was instructed to write the commissioners that the King County Medical Society objects to the reduction of the allowance for the County Health Department.

Mr. Robert O. Jones, Secretary of the Public Health League, described the work in which it is engaged. His talk was discusssed by Drs. C. E. Watts, B. T. King, E. W. Young, D. V. Trueblood and George Dowling. On motion of Dr. Watts it was voted that the society go on record as endorsing this work and that a committee of five be appointed to further this work among the members.

Dr. E. W. Young gave a report of the Entertainment Committee, stating the annual banquet was a social as well as a financial success. It was voted that the surplus funds be left in the hands of this committee.

LINCOLN COUNTY MEDICAL SOCIETY

Pres., R. P. Moore; Secty., C. S. Bumgarner

A meeting of the Lincoln County Medical Society was held at Harrington, Wash., April 16. The following program of papers was presented:

The Differential Diagnosis of Appendicitis, Dr. J. H. Berg, of Seattle. The discussion was led by Dr. J. S. Leisure, of Davenport.

The Cause and Treatment of Seasonal Hay Fever for Lincoln County, Dr. R. F. E. Stier, of Spokane.

Flat Feet, Dr. R. L. Jeffrey, of Seattle.

Mr. Robert O. Jones, Secretary of the Washington League for Health, gave an address.

IDAHO

SOUTH IDAHO DISTRICT MEDICAL SOCIETY

Pres., Ed E. Maxey; Secy., F. W. Almond

The annual meeting of the Southern Idaho District Society was held at Boise, April 14, 1923, the meeting being called to order at 1:30 p. m.

The first paper on the program was by Dr. F. W. Kirtchfield, of Boise, dentist, on The Cooperation of Physicians and Dentists in Focal Infections. The paper was discussed by dentists and physicians in attendance.

Dr. R. R. Parker, of the U. S. Public Health Service Laboratories at Hamilton, Montana, read a paper on Rocky Mountain Spotted Fever. Three factors have been found which contribute to the maintenance of the disease. They are the stage-to-stage transmission by the wood tic, transmission by the infected rabbit tic, and transmission by the infected tic, which becomes infected as a result of feeding on an infected rodent. He explained how tics could be examined to determine whether or not infected. Dr. H. E. Lamb, of Gooding, opened a discussion of this paper.

The paper was further discussed by Dr. Hideyo Noguchi from the Rockefeller Institute. He announced that he had perfected a serum which is found to be an absolute preventative against this disease. It is administered in two injections, at intervals of four to six days. Fourteen days later the vaccinated individual becomes absolutely immune to spotted fever. He stated that the serum would soon be distributed among state laboratories and that Idaho would have its share. He said the serum formula would later be given to reputable physicians and laboratories. In addition to this he stated that another serum had been perfected which would counteract the ill effects of tic-bite, if administered within twenty-four hours of the of the time of infection. Altho no symptoms of the disease appear within twenty-four hours of the bite, the tic may be examined and the fact ascertained whether or not it is infected. If such is found to be the case, the disease may be prevented by injection of this serum.

At 6:00 p. m. a dinner was served in the Chamber of Commerce dining room, following which was held an evening session.

The following officers were elected for the ensuing year: Pres., Dr. G. M. Waterhouse, Weiser; Vice-Pres., Dr. Harold Stone, Boise; Secy.-Treas., Dr. F. W. Almond, Boise.

Dr. M. T. Tallman, Boise, read a paper on Technic of Superficial X-ray Therapy. General discussion of Dr. Noguchi's address and the tic serum, which he had described, was held.

DEPARTMENT OF HOSPITAL STANDARDIZATION

Edited by George W. Swift, M. D.

THE JUDICIAL MIND IN MEDICINE

(In reply to the request for discussion or criticism of matters pertaining to hospital standardization, the following communication has been received. The whole problem of hospital standardization, as the doctor states, is an effort to improve the health of the individual, the community and the state.—Editor.)

Portland, Ore., April 10, 1923.

To the Editor: Every man is on the bench of a court which is supreme to him. We are so constituted that we pass sentence upon everything which passes before us—books and plays, fighters and athletes, beauty and ugliness. Is lynching right? Should Italy keep Fiume? Were the Giants really better than the Yanks? Is John Jones a better surgeon than John Smith? Is this hospital better than that one? Life, liberty and the right to judge seems to us to be the real benefits of the Constitution.

But our main trouble in the judgeship lies in the fact that we set all ideas or things in pairs, and then take one side to the exclusion of the other and unfortunately too often this depends upon the personal interest of the individual. It is so simple, so we think, that the college debater can take either side of the question. Then all of us feel that we ought to judge, and that it is cowardly to keep out of the mental fray. The number of decisions which come from these private courts would fill a five mile shelf of cases every day of the calender year.

To judge is instinctive, like swallowing, crying, laughing, sneezing. It is only the irresponsible person who withdraws from the scene, and says "I should worry." The average person is interested; he feels that his ideas are important. You are supposed to have opinions, but snap judgments are as unsatisfactory as snap shots.

Great shifts have come about of late, and in new lights do we survey old questions. Nowadays Republicans behave like old Democrats and vice versa. Certain labor leaders begin to argue like capitalists, America begins to feel the importance of the State. Medical men are using the massage of the osteopath, the water of the hydropath, the psychotherapy of other cults.

Keep on judging, but beware of the personal and partisan. The habit of viewing questions as a man, as a woman, as a business man, as a doctor many times is a habit. Is it not true that we as medical men interpret our findings many times on the say so of others, unsupported by scientific data, let alone scientific principles. We as medical men attempt to prove all things from a scientific basis, tho it cannot be questioned but what many excellent results are obtained without a satisfactory explanation.

The object of all medicine is improvement of the health of the individual, the community and the state. The higher the percentage obtained, the stronger organized medicine becomes, the more influence we have with the public, the less chance for subsidization by the state. How can our results be determined? Thru an honest judicial analysis of our work and end-results, as recorded in as near an accurate and a routine manner as possible.

This is probably the great virtue to be derived from the entire hospital standardization program, though we must not forget that a mind of good sound judgment is a very important requisite in this analysis. It is natural to split the question and then consider one side only; it is better to look at both sides at once and see where the misfit comes. The judicial mind in literature, art, business and medicine, especially from the standpoint of the clinician, surgeon and hospital executive, is a need the greater than which our country does not know today.

Edward F. Ziegelman, M. D.

809 Stevens Bldg.

HOSPITAL STANDARDIZATION

February 2, 1923.

To have a definite short routine history touching on practically all systems of the body; to have a definite statement of physical findings; to have a report of some laboratory work as suggested by the history and physical examination; and to have a diagnosis made (and recorded) from a study of the above findings; to record subsequent developments, operative findings, postmortem findings, etc., and a final diagnosis depending on this sequence of events; and to ask all hospitals to adopt one general method of keeping these reports, is hospital standardization.

The practical care of all cases does not require so much, and records are accordingly modified. It is a recognition of the fact that the practice of our profession in an orderly, careful and particular way is as essential as in the conduct of any business. It is our way of keeping a book account of what we do. The moral responsibility makes this business method more necessary, for we care for life and not property and money. For us as medical men it can only improve our knowledge.

Seattle and the Northwest is an "open hospital" country. It has been so for many years. System has not been a part of hospital routine, so far as the hospital per se goes. It had no requirements as to the medical men who used its facilities except that no abortions should be committed within its walls. New methods are almost revolutionary. Rigid hospital requirements in Seattle were really revolutionary. The first move came from a group of medical men asking the hospitals to make the changes to apply to themselves, i. e., the medical men.

Its success, then, depends on a cooperation between a professional and a lay organization. It should not be necessary to convince the laity that it is for their own good. However, sentiment and friendship, policy and business support cannot always be ruled out or educated out at once. What it has done for Seattle was on the way in part and already established in some of the hospitals. It has made general a requirement that a history shall be written, that a laboratory and x-ray examination shall be made when advisable; that a working diagnosis shall be made, and that no cases shall be operated upon without a diagnosis; and it has followed that all general hospitals have clinical, pathologic and x-ray laboratories; and it has provided for a study of events as may arise in the progress of the case, and a final diagnosis on discharge or death.

It is endeavoring to convince the managing officers or trustees of the hospitals that they are not cooperating for or protecting the general welfare of the patients they care for, if they do not exercise a supervision over the professional attainments and moral character of the medical men who visit their hospital. To have a hospital open to good and bad on an equal basis is just as detrimental to a hospital's reputation as to our profession. Hospital standardization cannot be complete till the attending medical men, too, are standardized. We are willing to do our part and shoulder the odium. To the College of Surgeons is given the credit for this their one piece of constructive work, in which they have been the most active agent.

Dr. Caspar W. Sharples.

The above appeared as the foreword in the second volume of the Saturday Morning Clinics, published by the Seattle Surgical Society. This epitomizes the whole subject of hospital standardization, so far as it has affected the institutions of the Northwest. To add more to it is unnecessary; to subtract a single paragraph from it would serve to weaken it. It was written by Dr. Caspar W. Sharples who has seen the hospitals of the Northwest from the first Providence Hospital in Seattle to the present day institutions. He has seen the effect of hospital standardization and has formed his opinion after painstaking study of the entire situation.

If every reader of Northwest Medicine would take this short article, study it well, frame it and practice medicine and surgery according to this outline, hospital standardization would not be a hardship on anyone. It would only add a great deal of pleasure to the practice of medicine.

THE EXECUTIVE STAFF

We must all judge the work of others impartially. This is very difficult to do at times. The experience which members of the profession are obtaining from service on the various executive staffs and on the central standardization committees is developing a group of men, who are more and more impartial in their review of the work of others. It is, perhaps, one of the most promising developments in the work on hospital standardization. It is unfortunate that the meetings of the executive staffs of the hospitals cannot be open to all members of the staff.

The executive staff of the hospital is composed of men who are vitally interested in the particular hospital, in which they have been asked to serve. Usually they are men who take practically all of their work to one hospital. A well-rounded executive staff is one, on which practically all the departments of medicine are represented. It is not a good plan for members to serve for too long a period on this staff as continuous members. They are liable to get into a rut, make snap decisions and in the end work for the detriment of the hospital. On the other hand, a constantly changing executive staff has a tendency to develop the other extreme. Problems that have been decided by a previous staff have to be decided again by the new staff. The idea is to have one or two members retire each year and new ones take their place. This gradually builds up in the hospital a group of men who are familiar with every detail of the hospital, as one thoroly learns all the details serving on the executive staff.

BOOK REVIEWS

Edited by Kenelm Winslow, M. D.

Medical Diagnosis. For the Student and Practitioner. By Charles Lyman Greene, M. D. St. Paul. Late Professor of Theory and Practice in University of Minnesota and Chief of Medical Clinic in University Hospitals, etc. Fifth Edition. Revised and Enlarged with 623 illustrations and 14 colored Plates. Cloth. 1453 pp. $12.00. P. Blakiston's Son and Co. Philadelphia. 1922.

This volume is encyclopedic in size and character. It not only includes physical diagnosis but discusses all the reasons for the signs and their diagnostic value, e. g., heart murmurs. It is a very complete and thoroly up-to-date work and it is with great pleasure that we highly commend it. In treating of aortic regurgitation Greene considers the Austin Flint murmur as usually due to a mitral stenosis and of a great rarity as a symptom of aortic disease. He might have been a little more precise and have said that in syphilitic aortic disease a presystolic or Austin Flint murmur was not usually significant of mitral stenosis because such is not of luetic origin. In three recent cases of aortic disease of undoubted syphilitic causation the Austin Flint murmur was observed by the reviewer. Cabot writes in aortic disease we have often four murmurs—with every valve sound but one—systolic and diastolic at base, presystolic and systolic at apex; aortic systolic due to roughening, mitral presystolic or Austin Flint origin, and mitral systolic due to dilatation of heart. Only the aortic diastolic murmur is of any organic significance. He also adds this is borne out by autopsies. Such was the case in the three patients noted above. Green emphasizes that in order to diagnose true aortic disease all the signs should be present, as a temporary dilatation of the heart may lead to an aortic diastolic murmur. This mistake was often made in perfectly healthy recruits in the Army, when subjected to extraordinary exertion in military training camps, particularly in obese medical men of middle age. The reviewer cannot devote more space to this well known work but feels it one of the best on its subject, as should be the case written by a teacher of such note and long clinical experience.

Winslow.

A Manual of Clinical Diagnosis, by means of Laboratory Methods for Students, Hospital Physicians and Practitioners, by Charles E. Simon, B. A., M. D. Lecturer in Medical Zoology, School of Hygiene and Public Health of the Johns Hopkins University, etc. Tenth Edition, Enlarged and Thoroughly Enlarged. Illustrated with 233 engravings and 23 plates. 1125 pp., $9.00. Lea & Fibiger, Philadelphia and New York, 1922.

Since the first edition in 1896 this work has been recognized as a standard in its field. During the twenty-five year interval it has increased in volume from 500 to more than 1100 pages, as the subject has widened in range. Even so, the author is of the opinion that not yet has the subject of clinical pathology met with that recognition which is its due. From one who believes in his subject so thoroly we would expect the best production of which the author is capable, and this expectation is fulfilled as we peruse the succeeding pages. Everywhere is evidence that here is one who writes from personal experience rather than from the gleanings of medical literature. In preparing the present edition the author has rewritten large sections and has extensively added to its scope.

Part II consists of "The Essential Factors in the Laboratory Diagnosis of Various Diseases (alphabetically arranged.)" Here all the commoner diseases are arranged alphabetically, and briefly outlined are the essential factors of laboratory diagnosis, followed by the urine and blood findings usual to the disease. No clearer view of this unusual and excellent feature can be given than to transcribe the author's remarks on encephalitis lethargica.

"Essential Factors. Hyperleukocytosis exceptional; blood and spinal cultures negative; spinal fluid clear, amount increased, cell count usually below 50, reducing substance sometimes slightly increased.

The Blood. The absolute leukocyte count is variable, ranging from normal to 15,000 or 20,000; as a rule it is not increased, and occasionally leukopenia has been observed. The differential count, in the few cases in which this has been reported, was normal. Blood cultures are sterile.

The Urine. The urine either shows no deviation from the normal, or there may be evidence of a mild degree of nephritis.

The Spinal Fluid. The spinal fluid shows practically the same picture that is seen in poliomyelitis. It is clear; sometimes under somewhat increased pressure; it is usually increased in amount; in rare cases it is blood tinged. A coagulum rarely forms. The cell count may be normal; more often it is slightly increased—to 10 to 20 or even 50; the count rarely reaches 100 to 150 cells per cmm.; very exceptionally, high counts (1500) have been noted. The increase is almost always due to lymphocytes, but at times polynuclears predominate.

The proteins (albumin and globulin) are somewhat increased; the same is true of the reducing substance of the spinal fluid (dextrose.) The gold curve shows nothing characteristic. Cultures are negative."

Thruout this work is of the highest value to both laboratory worker and practitioner.

West.

Nutrition of Mother and Child. By C. Ulysses Moore, M. D., M. Sc. (Ped.) Instructor in Diseases of Children, University of Oregon Medical School, etc. Including Menus and Receipes by Myrtle Josephine Ferguson, B. S., B. S., H. Ec. Professor of Nutrition, Iowa State College, Ames, Iowa. With [illegible] illustrations. 234 pp., $2.00. J. B. Lippincott Company, Philadelphia and London, 1923.

This volume is of special interest to the physicians of the Northwest because its author is a well-known member of the Portland profession. It is intended not so much for the instruction of physicians, as for the guidance and direction of mothers. It is based on the fact that during the past five years important discoveries in nutrition have revolutionized our ideas in nutrition. Special emphasis is placed on breast feeding, vitamines and the mineral content of the diet. The language employed is as untechnical as possible, for the benefit of persons without medical training. The author states that one-fifth of all deaths occur during the first year of life, and more than one-half of these are directly due to nutritional disturbances. The chapter, "The Three Known Vitamines," is a clear presentation of this subject. A striking illustration is of two rats, the small scrawny one having been deprived of the B vitamine. It is emphasized that a mother should provide enough variety in her children's dietary to insure sufficient food daily, containing the three necessary vitamines. It would be well for every prospective mother to read the chapter on breast feeding. Jacobi is quoted as saying that eighty-five per cent of the deaths during the first year of life are in bottle-fed infants. Various nutritional difficulties resulting from the bottle are clearly presented. The collection of menus and recipes provide simple diets suitable for children. This volume should be of material assistance to mothers in the rearing of their children.

Smith.

Diseases of the Rectum, Anus and Colon. By Samuel Goodwin Gant, M. D., LL. D., Professor and Chief of the Department for Diseases of the Colon, Rectum and Anus, at the Broad Street Hospital, Graduate School of Medicine, New York City. Three octavo volumes, totalling 1616 pages with 1128 illustrations on 1085 figures and 10 inserts in colors. Philadelphia and London. W. B. Saunders Company, 1923. Cloth, $25.00 net.

This extensive production in three volumes is the most complete and well illustrated of any such work that have been published in the English language. Many of the illustrations are colored and from this standpoint alone it is distinctively a work of art. All of the latest forms of treatment and operative procedures, right up to the time of its publication, seem to be clearly covered. It would seem to us that the chapter on "Backache and Sciatica" could well have been left out of the work, as belonging in a different field than that of proctology or enterology.

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The use of local anesthesia has been strongly emphasized thruout the work and in all the pictures representing surgical operations the location and method of anesthesia is graphically given as well as the surgical technic, so that each picture does a double service. The book is so arranged and classified that it will serve as a most excellent work of reference. It is distinctively an advance over any of the previous one volume editions by this well known author and he will probably find it difficult to make many additions to the context during his

CROOKALL.

Treatment of Sexual Impotence and Other Sexual Disorders in Men and Women. By William J. Robinson, M. D. Eleventh Edition, revised and enlarged. 502 pp. $5.00. Critic and Guide Co. New York. 1923.

This book covers the subject well. Masturbation is given due consideration, the author stating that a large percentage of sexual disorders are due to this cause. He makes the startling statement that masturbation may cause locomotor ataxia. Sexual impotence is given considerable space, some very good points being brought out, both as to differential diagnosis and treatment. Under notes and explanation the author has translated many of the medical and scientific terms into plain English. This is a very good plan, not only for the benefit of the doctors, but also for the many ardent lay-readers who take satisfaction in perusing this book.

O. A. NELSON.

The Oxford Medicine. By various authors. Edited by Henry A. Christian, A. M., M. D., Hersey Professor of Theory and Practice of Physics of Harvard University, and Sir James Mackensie, M. D., F. R. C. P., LL. D., F. R. S., Consulting Physician in the London Hospital. In six volumes. Oxford University Press. London & New York.

This set of loose leaf medicine has already been published in six volumes. Hitherto there has been no index to any of the volumes. Now has been published the index of each separate volume, six in number. One is to be attached to each of the volumes. This index greatly increases the usefulness of this system and makes it of real value to the busy practitioner. At the same time a collection of supplemental leaves have been received, the addition of which will bring this system of medicine up-to-date.

The Medical Clinics of North America. (Issued serially every other month.) Volume 6. No. 4. January, 1923. Philadelphia Number. Octavo of 263 pp. Per clinic year, paper, $12; cloth, $16. W. B. Saunders Company. Philadelphia & London.

This is a very valuable number, consisting of clinics of leading internists of Philadelphia. There are series of clinical reports of diseases of the vascular system, including hypertension, coronary thrombosis, leukemia, aneurysm of the aorta and blood pressure. Clinical cases, dealing with pulmonary diseases, include treatment of empyema, tuberculous pleurisy and bronchoscopy.

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ORIGINAL CONTRIBUTIONS

AN APPRAISAL OF ENDOCRINOLOGY*

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At no time in the history of America has the public been so interested in, or so well informed regarding, matters of health and disease. The digging of the Panama Canal was a tremendous health lesson, the point of which was not lost to the intelligent lay public. The leading newspapers, which are keenly responsive to public demands, have their widely read departments devoted to health problems, and these publish much sane counsel. Health articles are featured in the popular magazines. Insurance companies and industrial concerns are conducting health campaigns. The common citizen is now willing as never before to spend money on the maintenance of public health agencies. These measures are all educative. As a result there is now a much keener general appreciation than ever in the past as to what constitutes good medical practice.

Along with this development, however, there exists a considerable feeling of dissatisfaction with *regular* medicine as practiced at the present time. Whether justified or not, more than a few laymen hold the conviction that the medical profession has been weighed in the balance and found wanting. As a matter of mere expediency, to say nothing of professional obligations, it behooves us, therefore, to give careful attention to the factors that make for public esteem and respect.

In endocrinology, as in other fields of medicine, the public demands, as never before, honesty of purpose, straightforwardness, skill and knowledge. The intelligent public is by no means unaware that the subject of "the endocrines" has become a joke. Walter Lippmann, in a recent article, bracketed "glands" with mesmerism and amateur Freudism. It seems significant that when, a few months ago, an extravagant book was published in which a young chemist attempted to rewrite sociology, ethics and psychology in terms of endocrinology, a guffaw ran thru the English speaking world. In the present critical state of public opinion it behooves the doctor to proceed with a deal of caution when he turns to endocrinology.

It has been my lot within the past six years to have had occasion to read some ten thousand endoctrine articles, either in abstract or in the original. The outstanding impression from this experience is that the most characteristic feature of the endoctrine literature, taken as a whole, is over-confident exploitation of defective knowledge. If the total mass of the written literature constitutes endocrinology, wide spread skepticism of it is an indication of general good judgment. It is true that the field includes all that we know on thyroid disorders and on diabetes, and it includes many well established facts, besides, but the sum total of such knowledge by no means suffices to counterbalance the half knowledge, guesses, extravagancies and personal vagaries included in the literature.

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A definite alignment is highly desirable upon the part of those interested in the advancement of genuine *practical* endocrinology. Huxley once said, "The improver of natural knowledge absolutely refuses to acknowledge authority as such. For him skepticism is the highest of duties, blind faith the unpardonable sin. And it cannot be thought otherwise, for every great advance in natural knowledge has involved the absolute rejection of authority, the cherishing of the keenest skepticism, the annihilation of the spirit of blind faith." This, I think, might well serve as a platform for the endocrinologist, either the clinician or the laboratorian. The validity of Huxley's principles is sufficiently attested by a comparison of the rapidity of advancement in the critical twentieth century with the stagnation of the credulous middle ages. The great master in medicine, whose centenary is being celebrated this year thruout the world, afforded a brilliant example of Huxley's keen skepticism at work.

"The improver of natural knowledge absolutely refuses to acknowledge authority as such." Upon what basis do you prescribe an endocrine product? If it be thyroid substance for myxedema or cretinism, you do it upon the authority of well substantiated observations. Upon what authority do you add adrenalin to novocain to give a bloodless anesthetic field for local operations or inject adrenalin as a temporary cardiovascular stimulant? Again upon the authority of a well substantiated body of facts. Similarly, the use of pituitary extract in uterine or intestinal inertia and in diabetes insipidus can be adequately justified. Within the past three months it has become possible to add insulin as a valuable mendicment. Despite the fact, however, that so-called practical endocrinology has had thousands of enthusiastic proponents for more than twenty years, the foregoing comprises the whole of the adequately substantiated doctrine of organotherapy. That the field promises ultimate wide extension is, in this connection, beside the point.

"For the improver of natural knowledge, skepticism is the highest of duties, blind faith the unpardonable sin," says Huxley. How do you meet the detail man? In what spirit do you read the seductive pamphlet or postcard that reaches your desk? With skepticism? It is well. The object of a merchant is to sell goods. With blind faith, or, one may add, with blind disbelief? So much the worse for doctor and for patient. Either a nihilistic or a credulous attitude places a stumbling block in the way of further progress. The profitable attitude is one of open-minded skepticism, and the wise procedure is either to refuse to dabble with uncertain endocrine therapy or to set about seriously to help demonstrate its significance. It is unfortunate that so many well-trained, capable physicians have refused their cooperation and so many half-trained, superficial enthusiasts have given so much of theirs.

In the last analysis the only authority is nature herself; but in the field of endocrinology her doings are shrouded with much indirection and mystery. Is it proposed to find out from nature the real value, for example, of ovarian extract? Novak, after years of careful clinical observation, says he has not yet learned its value. But one much advertised writer in this field has recently said, in effect, "I need but give a few doses of any endocrine product to know for myself; if I get results, it is good. If I get no results, I would be a fool to continue."

A more naive demonstration of medical ignorance could not be invented. The history of medicine is full of failures—many pathetic, some merely amusing—to settle therapeutic problems by appeals to uncontrolled experience. Thousands of patients were treated by reputable doctors of the seventeenth century by a celebrated "wound salve," comprised principally of the patient's own blood and human fat. The salve, however, was placed, not upon the patient, but upon the weapon from which he had received his hurt. Was the treatment successful? It often was. The salve was applied, the patient recovered. At a later period blood letting was used for almost every disease. Elaborate charts were worked out prescribing points of election, where the vein should be opened for each disorder. This method also was successful; many patients recovered. It was presumed that those who unaccommodatingly died were merely beyond the reach of medical help. At this same period, what could not be accomplished by venesection violent purgation could do. Practical experience for many years showed this method also to be successful. Another classic example was seen in the famous Perkin's tractors of a century ago. These consisted of two pieces of metal alloy adapted to each other to form a sort of pair of calipers to be used by stroking over the diseased region to "draw out" the disease. Their value as a curative agent was remarkable, as was shown by letters from hundreds of doctors who had utilized them with greatest success. Enthusiasm, however, began to wane when two shrewd Yankees, disregarding patent laws, whittled tractors out of ordinary wood and painted them to represent the metals, and succeeded also in securing wonderful results. To come to more recent times, ingluvin, obtained from the gizzards of fowls was found to be almost a panacea for digestive disorders. Was ingluvin a successful therapeutic agent? Many physicians used it and reported good results, but who uses it now? The list could be multiplied almost indefinitely, but these examples sufficiently illustrate the fact that mere so-called "practical success" in cases without suitable control means, as evidence, almost nothing. Such "success" at best but sets a problem for real investigation.

But, it might be said, "that is all in the past. We are wiser now." Not at all. We are dealing with something much more fundamental than ancestral lack of erudition. Humanity is incorrigibly addicted to the *post hoc* fallacy. Who of us on April first would kick an "empty" sack full of bricks and see an urchin scampering away without at least feeling very uncharitable toward the urchin—not knowing that he was running home in quest of sympathy for his own podalic contusion? The *post hoc* fallacy in practical therapeutics has betrayed physicians, as it has laymen, from time immemorial and will continue to do so as long as they fail to realize the necessity for adequate control observations. While it is true that in a simple situation the control may be simple, endocrinology offers few simple situations.

If mere getting results is a proof of the value of any therapeutic procedure, we have no room to object to chiropractic, electric belts, grass-walking or any other therapeutic absurdity. All of these "give results." Let us remember the aphorism of wise old Pare: "I treated the patient, God cured him." God is quite as good to the endocrinologist as He was to Pare. So much, then, for sound skepticism.

Next to a proper critical attitude the most important need is enthusiasm. This means, however, a genuine enthusiasm that leads to hard, exacting work, not the shallow elation that leads to unsubstantial, imaginative outpourings or of euphemistic commercial mendacity. It means enthusiasm that will lead to much more of intelligent experimentation, including experimentation in the field of endocrine therapeutics. But the price of this enthusiasm is high. It means protracted, unselfish devotion, exacting patience, and willingness, if necsesary, to acknowledge complete defeat. It means, in short, the spirit of the true investigator. It has little in common with a careless willingness to follow the suggestions of the detail man to "try it out, doctor, for yourself," when the trying out involves merely the expenditure of the patient's money and possibly a betrayal of his confidence, in haphazard dosing that can lead at best to nothing more than a general impression in the mind of the doctor, and perhaps another boost for chiropractic. The ethics of the situation are, to my mind, rigid. If one is to experiment at all he owes it to his patient, to himself and to his profession to put his questions to nature in a way to permit an intelligible answer; then, having obtained an answer, to repeat the question time after time until the limitations of the answer are clear. Having done this, one has accomplished a genuine research. He is then ethically obligated to place his evidence (not his theories) at the disposal of his fellow practioners. A mere "testimonial" is a sad caricature of medical evidence, whether signed with the mystic "M. D.—name on request"—or not.

Altogether, the great need in present day endocrinology is common sense. When offered information in medicine just as in a horse trade, good sense demands that one consider the source. Unbiased opinion is one of the rare things of earth. When a man has committed himself to a theory, or when he has something to sell, let the disciple or the buyer beware. Good judgment in either case prescribes that his evidence be considered entirely apart from his exposition.

There has recently been aroused much interest in pancreatic extract in the treatment of diabetes. The evidence is overwhelming that in diabetes pancreas preparations by mouth are futile. Murlin, after years of experience with pancreatic preparations, in a recent personal communication stated that, altho in some cases diabetes is affected to a minor degree, the effect is very uncertain and enormous doses are required. A few grains of a dried preparation are absurdly inadequate. In view of current interest, an attempt was made by a certain manufacturer to do off-hand what had occupied the efforts of skilled scientists for thirty years, namely, to evolve an extract that could be given hypodermically. This effort was a failure, hence either the favorable turn of the tide had to be missed or some other preparation evolved. To tell in plain, old Anglo-Saxon just what was done: Dried, raw sweetbreads were combined with dried gut lining and dried tonsils and the preparation put on the market. Why the intestine? That *secretin* can be derived from duodenal mucosa is widely known, hence its inclusion supposedly affords a good selling point. That the reliable evidence regarding secretin pertains merely to the *external* pancreatic secretion and that, by mouth, it is inert is, of course, also true. Why was tonsil added? Forsooth, certain foreign "investigators," names not mentioned, have said that tonsils are good for diabetes, and, anyway, three is more pluriglandular than two. In this case we need not, however, be governed by probabilities. In view of the ease with which the exact value of any treatment for diabetes can be determined by blood sugar studies, there can be no decent excuse for selling or prescribing such a mixture until its value is exactly determined and published.

In absence of decent evidence of its utility, to ask a fellow being to buy and to swallow a disgusting mess of dried viscera for hypofunction of his pancreas shows hypofunction of both the doctor's ethical and his esthetic senses. Moreover, it wrongs the medical profession by subjecting it to needless ridicule and distrust. Much better sanction than a very slight possibility of therapeutic efficacy is needed to justify a return in every day practice to the filth pharmacopeias of the sixteenth century. The mixture of sweetbreads, entrails and tonsils is too like that of the witches' broth of Macbeth:

> "Fillet of a fenny snake,
> In the cauldron boil and bake;
> Eye of newt, and toe of frog,
> Wool of bat, and tongue of dog,
> Adder's fork and blind-worm's sting,
> Lizard's leg, and owlet's wing."

If this Shakespearean mess were ground up and put into expensive, fancy tablets, it should seem entirely familiar to pluriglandular faddists, and, if administered with sufficient assurance, would, no doubt, in the hands of the credulous "M. D.—name on demand"—give "excellent results" in several obscure disorders, for example, vomiting of pregnancy.

Let us now consider some of the difficulties in solving endocrine problems. Perhaps the most trying of these is our inability to produce endocrinopathies in experimental animals. With the exception of acute adrenal deficiency, hypogonadism, and more or less close imitation of cretinism and diabetes, little has been accomplished in simulating human incretory disorders. Even the most benighted physiologist recognizes that he cannot produce Graves' disease (tho some clinicians think they can), Addison's disease, or acromegaly, to say nothing of the numerous other hypothetically possible pluriglandular affections. No intelligent man, however, would deny the existence of established clinical entities on any such ground; certainly no competent physiologist offers such denial. To accuse physiologists of such ineptitude is mere camouflage. When, however, some doctor with an eye to easy fame evolves a fantastic theory upon flimsy or non-existent physiologic evidence, the physiologist is in duty bound to enter a denial. Upon analysis, the difficulty is ordinarily found to be *not,* as some writers would have it appear, that the physiologist knows so little medicine, but that the impressionistic endocrinologist knows so much physiology that is not true. The reproach of misapplication of physiology to clinical endocrinology has to be accepted, I maintain, in the great majority of cases, by the clinicians themselves.

Another difficulty to one beginning investigational work is to evaluate the literature. He can, however, soon learn the earmarks of good scientific writing. When, in a given article, he finds the evidence slurred over or inadequate in quantity, or when the evidence shows undue variability, he can be fairly sure without further consideration that the article is of negligible significance. It is remarkable how often in endocrine articles the evidence is absurdly inadequate. Writers, and these by no means always tyros, will solemly cite "average results" in two or three rabbits or percentages of a half-dozen cases. Such results ordinarily mean and can mean nothing.

In no other field of medicine, perhaps, is the pseudoscientists so much in evidence as in endocrinology. He has even developed a fairly characteristic literary technic. In the foreground of his paper stands a theory. He then finds some articles supporting the theory and quotes these with gusto, but passes over in pained silence any observations that fail to agree with his theory. He may assume a protective coloration by introducing an admission here and there that some point is not entirely proved but it is made clear that the theory is "practically" well substantiated at that.

As a matter of fact no theory is *practically* substantiated until it is backed by an adequate body of carefully controlled and critically evaluated data. Indeed, the real reproach to be offered against endocrine enthusiasts, pluriglandular or otherwise, is their persistent failure to file genuine evidence. A few of the worst offenders employ such pettifogging devices as unacknowledged substitutions of italics, wrenching isolated statements from their context and even direct mendacity.

Another major difficulty in the field of endocrinology is the complexity resulting from interrelations among the various organs. One day I amused a mathematical friend and myself with this query: Granted that there are nine endocrine glands and that each can be in a state of normality, hyperfunction, hypofunction, dysfunction, or dysfunction combined with hyper- or hypofunction, how many possible endocrinopathies are there? The answer is six to the ninth power, or 10,077,-695,—one combination being normality in all glands. If every doctor were an Addison and described one of these endocrinopathies, after all clinicians now living were long dead, there would still be pluriglandular syndromes to describe. Moreover, all of these ten million permutations would remain for the physiologist to work out in all the common laboratory animals and the way each is affected by light, food, heat, exercise, vitamines A, B, C, or what not.

As a matter of fact, the ten million estimate is merely the *necessary corollary* of what some endocrine enthusiasts profess to believe. I have no idea how many actual combinations there may be. I do believe, however, the thing we must achieve before organotherapy will amount to much outside a few clean cut gland disorders is to learn to pick out elements in a given syndrome and take therapeutic measures with intelligent regard to etiology. It is well to remember that nature has somehow kept the human race going for some millions of years without the aid of endocrinologists and hence many interdepartmental difficulties tend to regulate themselves. As Cannon has pointed out, the incretory regulators of metabolism do not commonly run riot, but are themselves subject to regulation.

I have referred to the difficulties as regards the literature. We have to deal with important endocrine articles not only in English, French, and German, but also Swedish, Danish, Japanese, Spanish, Biscayan, Portuguese, Greek, Italian, Dutch, Polish and Russian. In this regard endocrinology may serve to illustrate the situation in other special fields of medicine. The Library of the Surgeon General receives about two thousand periodicals, including some 250 sets of society proceedings. Endocrine articles may appear in any of these. It seems to be commonly supposed that this literature is fairly well abstracted in some of the general clinical journals. The most complete of these, as a matter of fact, leaves about 85 per cent of the publications untouched. Moreover, this 85 per cent includes many important journals. Workers in endocrinology need as a first step a special cataloger in the Surgeon General's Library, so that titles might be made promptly available. It is true that the titles ultimately appear in the Index Medicus, but a large proportion of the endocrine articles are not cataloged there as such. Then all significant articles should be promptly abstracted. The output of endocrine articles is now about 3,000 a year. Directly or indirectly every doctor is affected by the efficiency or lack of efficiency with which world-wide investigations are brought to bear on his problems. We have a problem here that demands much more attention than it is receiving. In view of the present economic situation thruout the world, the problem devolves primarily upon the American medical profession.

May I now briefly recapitulate: The constructive endocrinologist must recognize that much that has passed as endocrinology has been futile extravagance which has brought and is increasingly bringing ridicule upon the medical profession. Professional integrity as well as good strategy demands the adoption of a spirit of keen, but open-minded skepticism. The scope of substantiated organotherapy is as yet narrow, but its promise justifies enthusiastic study in the face of numerous difficulties. Uncontrolled experience is unreliable as a source of knowledge, as shown by persistent use of many absurd therapeutic agents; cause and coincidence are too difficult to distinguish without careful control observations. Much of the endocrine literature is vitiated by commercialism or faddism. Some commercial efforts have gone to disgraceful lengths. Some of the chief difficulties in endocrine advancement are the intrinsic complexity of many problems, due especially to vaguely understood interrelations among the incretory organs, the difficulty of reproducing endocrinopathies in animals, the bulk and ambiguity of the literature and the lack of adequate facilities for assembling the evidence from hundreds of periodicals in many languages.

So much for the dark side of the picture. Some endocrinologists at any rate are conscious of the many sins and wickednesses perpetrated in their name. But, like many other sinners, they also have some pride of achievement. Despite the abuse of the subject at the hands of its too eager proponents, endocrinology on a record of its accomplishments and on the promise it holds of far reaching future developments justifies a feeling of enthusiasm.

Recently the eyes of the medical world have been focused upon the University of Toronto, where a brilliant piece of investigation has succeeded in providing pancreatic extracts for the specific treatment of diabetes mellitus. The research has progressed to a point at which many victims of severe diabetes are being kept in a state of health by use of such extracts.

Ever since the discovery by V. Mehring and Minkowski in 1889 that diabetes mellitus can be produced by extirpating the pancreas, attempts have repeatedly been made to obtain curative extracts. Minkowski, himself, in 1892 attempted to solve the problem but with no success. Even earlier, however, Caparelli used normal saline extract of dogs' pancreas injected into the peritoneal cavity and succeeded in inducing thereby a marked decrease in glycosuria and in many instances a complete disappearance of urinary sugar. In 1893 clinical trials of pancreatic material were made by several investigators in Italy and England, with some successes and some failures. Positive results were reported by Ausset in France and Bormann in Russia. Ausset used raw pancreas in a diabetic dog and in a single human case. Bormann first used pancreas by mouth, later by rectal infusion and finally by subcutaneous injection. One of his patients receiving pancreas extract subcutaneously gained eight pounds in six weeks, without change in diet. Numerous negative results at this time need not be mentioned. In 1896 Lisser reported that rectal infusions of aqueous pancreatic extract caused marked diminuation of both the glycosuria and polyuria of diabetic patients. One of these, however, soon developed intolerance for the extract. Spillman reported the cases of two diabetics treated with pancreatic press juice with only slight abatement of the glycosuria. In 1897 Thesen and Lauritzen obtained some favorable results in human cases from feeding fresh raw pancreas by mouth in doses of 50 to 300 grams daily. This, of course, however, soon became repugnant to the patient. At this time also, Hogounenq and Doyon made pancreatic extracts in a great variety of ways and administered them to depancreatized dogs thru the stomach, with entirely negative results. Hedon, at about this time, also, found that glycerine extracts by mouth produced little effect. These negative results made a marked impression on investigators and materially discouraged the growing enthusiasm regarding pancreatic therapy. Blumenthal, however, in 1898 carried the work further, using purified press juice of raw pancreas. Given intravenously it proved fatal to an animal, but when given subcutaneously caused only ulcerations. In one case he reported a 40 per cent increase in utilization of sugar. The cure seeming worse than the disease, the work was dropped. Thus ended the first decade of investigational work.

There was no further advancement in pancreatic therapy for the next ten years, altho excellent work was done by histologists and pathologists by way of identifying the islands of Langerhans as the tissues especially connected with diabetes, and by biologic chemists in establishing the true nature of the disease. The third decade of diabetic research began with the well-known work of Allen in 1908. To my mind, this work might well serve as a model in the solution of endocrine problems. Allen, a young California graduate, went to Harvard University and asked permission of Rosenow to study in his laboratory the cause and cure of diabetes. For some two years he worked quietly and assiduously, collecting and digesting a tremendous volume of literature on the subject, and carrying out an elaborate series of experimental studies. Probably no one who was associated with Allen at the time realized the great importance of what he was doing and he was modestly content to have it so. He ultimately reached the conclusion that the outstanding feature of the etiology of diabetes is overstrain on the incretory elements of the pancreas. From this conclusion the therapeutic deduction was obviously, now, that the overworked pancreas should be treated just as any other overworked organ, namely by rest. Accordingly, he outlined what is now the world-famed Allen treatment of diabetes.

In the meanwhile work with pancreatic extracts was resumed. Zuelzer took the precaution of securing fresh material and all but succeeded in solving the problem. He used press juice from which the proteins were precipitated by various means and administered the extract either subcutaneously or intravenously. He succeeded in completely curing depancreatized dogs of glycosuria. He reported also eight cases in human subjects with some rather striking favorable results. One of these patients, however, showed marked rise of temperature and was severely nauseated and the treatment was discontinued. Forschback had a somewhat similar experience and also apparently was led to discontinue his experiments by unfavorable systematic reactions. Other work of much interest was done by Knowlton of Syracuse, working with Starling of London, by which an effective extract was obtained that enabled the heart of a diabetic dog to utilize sugar. Clarke of Johns Hopkins also showed that an isolated heart-lung preparation could utilize sugar when the pancreas was included in the circuit, but not otherwise. His untimely death cut short this very promising line of attack.

Murlin (to whom I am indebted for various of the foregoing details) at about this same time conceived the idea that the duodenal mucosa might have something to do with diabetes and prepared a combined extract of this organ and pancreas. When injected into the vein of a diabetic dog the urine became sugar free in about twenty-four hours and remained so for six hours, but at the end of twenty-four hours the total sugar secretion had regained its normal level, hence, it seemed that the extract had merely served to render the kidney temporarily impermeable to sugar. (Parenthetically, it is this possibility that renders glycosuria determinations equivocal as criteria in the treatment of diabetes.) Murlin's experiments were continued, however, but in accordance with general belief at that time, the unfortunate assumption was made that solutions for intravenous use must be alkaline and the extracts were thereby rendered inert. Continuing in the face of this discouragment it was ultimately proved that an extract made slightly alkaline and administered to a depancreatized dog could bring about the actual oxidation of sugar which is the crux of the whole matter.

The next important step in this work involved a new tack. There is an old observation, first made by Borelli, that ligation of the ducts of the pancreas results merely in degeneration of the organ without the production of diabetes. In 1884 Arnozan and Vaillard repeated this experiment in the rabbit and on the fourteenth day noted that the parenchyma of the gland was mostly replaced by fibrous tissue.

The pancreatic remnants resulting from such ligations were found upon microscopic study to consist largely of connective tissue, but with certain surviving cells resembling those of the islands of Langerhans. It was found that extirpation of such pancreatic remnants led to the development of diabetes.

In view of these facts, Banting, in 1920, considered the idea that one might obtain from such pancreatic remnants a potent extract of the Langerhans tissue, uncontaminated with pancreatic digestive enzymes. The idea was by no means new but it is Banting's claim to high distinction that, after several months of consideration, he decided, in the face of discouraging advice, to give up his practice, close his office and migrate to Macleod's laboratory at Toronto for an intensive day and night investigation of the subject. There he secured the cooperation of Best, a member of Macleod's staff. The pancreatic ducts of a number of dogs were tied. After degeneration had occurred an extract of the degenerated glands was made at zero temperature in Ringer's solution. This was filtered and the filtrate injected into the veins of diabetic animals. It proved efficacious in bringing about a marked lowering of the blood sugar. It was obvious, however, that such a tedious method of preparing an antidiabetic extract could not be of practical clinical importance, hence, with the aid of various collaborators, ways were sought of obtaining an extract by other methods. Among these was extracting the pancreases of beef fetuses before they had begun to form digestive enzymes. Success was also attained by the use of ordinary adult pencreatic gland, treated with copious amounts of alcohol. The alcoholic extraction was named "insulin," a word derived from "insula," an island.

In the meanwhile, Murlin and his associates have been independently engaged upon the problem and have developed other methods of obtaining potent extracts. One of the most interesting is to perfuse the pancreas of various animals with Locke's solution. Such perfusates were administered to depancreatized animals and the blood sugar was brought down to, or below, the normal level, while the respiratory quotient was increased toward the normal. Perfusates proved more potent when obtained with an acid medium. It was further found that, by slight modifications, several of the methods used by previous investigators were effective. It is a tragedy that has cost many human lives that a slightly greater degree of determination was not shown in these studies.

In summary, Murlin says: "The essential steps in the production of a potent, non-irritating, antidiabetic extract are: (1) destruction of trypsin, (2) precipitation of extraneous proteins, (3) concentration, and (4) removal of irritant substances." It was found that potent and non-toxic extracts could be prepared with aqueous as well as with alcoholic media. The active substance is non-dialyzable thru vegetable parchment (4 hours); it is not precipitated by most of the ordinary protein precipitating agents and it withstands boiling for five minutes in decinormal acid media. Murlin proposes the term ,"glucopyron," meaning sugar burning, for the active substance itself, however prepared, leaving the term "insulin" to cover the patented alcoholic extract.

Space does not permit consideration of other interesting aspects of the work except to call attention to the fact that the very potency of the extracts renders them somewhat dangerous. It is possible, not only to bring blood sugar down to normal, but to half normal. When this condition is reached, expermental animals develop convulsions, go into coma and, unless promptly supplied with more sugar, die.

(To be concluded)

THE PRODROMAL SYMPTOMS OF HEADACHE DUE TO CONSTIPATION *

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There is perhaps no field in the realm of internal medicine, which presents greater difficulty to diagnosis than the correct differentiation of the etiology of headaches. Many such cases are so typical in their symptoms and signs that no hardship is encountered in their correct interpretation and relief. There remains, however, a considerable percentage of cases who are not properly classified; who consequently do not respond to treatment; who have consulted various physicians and friends; who have become discouraged by osteopathy, chiropractics and christian science, and finally are referred to the diagnostician for study.

It is well to have in mind a very definite classification of the causes of headache before undertaking its study. A slight modification of the table of Fussell affords a very simple outline of the causes of headache.

I. Reflex Irritation.
  1. Ocular.
  2. Nasal and Pharyngeal.
  3. Accessory sinuses.
  4. Middle ear.
  5. Decayed teeth.
  6. Abscessed teeth.
  7. Impacted teeth.
  8. Reproductive organs.
  9. Thoracic and abdominal vicera.

II. Toxemia.
  1. Infections.
    a. Acute infections.
    b. Malaria.
    c. Syphilis.
  2. Metabolic and defective elimination.
    a. Uraemia.
    b. Diabetes.
    c. Gout.
    d. Rheumatism.
    e. Gastrohepatic derangements.
    f. Constipation.
    g. Exophthalmic goiter.
  3. Action of drugs and poisons.
    a. Acute, as nitrites, quinin, opium, alcohol, carbon monoxid, dioxid, etc.
    b. Chronic, as lead, tobacco, alcohol, opium, tea and coffee.

III. Circulatory Disturbances.
  1. Passive congestion.
    a. Tight clothing about neck.
    b. Pressure on neck veins.
    c. Disease of right heart.
    d. Emphysema, etc.
  2. Active hyperemia.
    a. As in acute meningitis.
    b. As in prolonged mental exertion.
  3. Anemia.
    a. Chlorosis, pernicious or secondary anemia.
    b. Aortic stenosis.
    c. Fatty heart.

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*Read before the Forty-eighth Annual Meeting of Oregon State Medical Association, Portland, Ore., Oct. 26-27, 1922.

- d. Arteriosclerosis.
- e. Hypotension.

IV. Neurosis.
1. Epilepsy.
2. Hysteria.
3. Neurasthenia.

V. Organic Diseases of Brain or Membranes.
1. Meningitis.
2. Syphilis.
3. Traumatic.
4. Encephalitis.
5. Abscess.
6. Tumor.
7. Aneurism.

VI. Caries of the Cranial Bones.

VII. Indurative or Muscular.

For the theme of this communication I have selected the form of headaches due to defective elimination, as observed in constipation. There are such excellent men as Buchanan, doing much of his original research at the Mayo Clinic, who believe that migraine is a hereditary disease and incurable, also that constipation is not an etiologic factor. Such conclusions are not, however, universally accepted. There are a number of patients suffering with headache, who are not relieved by any known form of treatment, but this group is not included in this study. Only private patients, who have been relieved of their headache by correcting the defective intestinal elimination, have been studied in relationship to the prodromal symptoms of their headaches.

Much attention has been given in the medical literature to the relationship between constipation and headache, but little mention has been made of the symptoms which present before the onset of the headache. It would seem from careful observation and study of defective elimination, as observed in constipation headaches, that the condition is a toxemia and that two stages can be differentiated: (1) Period of stimulation, (2) period of intoxication.

These stages are often quite as characteristic as those observed in alcohol poisoning. The majority of people pass thru a stage of excitement when drinking alcoholic beverages, but there is, however, a small percentage who become dopy at once and do not experience stimulation. The majority of patients suffering with constipation headaches are stimulated at first and slowly become intoxicated.

Kultner, in 1912, called attention to patients who had "periodic spells of ravenous hunger, attacks of nausea and vomiting." How frequently patients ascribe their headache attacks to "overeating" the night before or "overeating" the day previously. How often a patient's friends or relatives can foretell an oncoming headache by his actions; by the unusual amount of mental or manual labor the patient is able to do; by the hilarious, care-free attitude; by the ravenous appetite or the cravings for unusual or special foods. These patients frequently state that they "cannot understand why they should have had a headache today, for they never felt better in their lives than yesterday."

The family usually believes that the headache was brought on by overexertion, overeating or indiscretion, and the patient himself has no doubt of it. Patients often express the feeling of nervousness, restlessness and an indescribable anxiety, which, if occurring in the night, results in sleeplessness, bad dreams, nightmares, moaning, groaning and a bad night. Having heard these statements so often, questions naturally arise: Why did the patient overeat, why did he overexert, why did he crave candy, pickles, honey or unusual foods, why should he feel so wonderful the day before a headache, why should he have such a restless or sleepless night? The overeating, the overexertion, the sense of well-being did not produce the headache, but the increasing toxemia at first stimulated and later intoxicated . As the drinking man is able to do unusual feats during the period of stimulation, so is the patient with intestinal toxemia during the stimulatory stage. The overeating did not produce the headache, but the beginning toxemia stimulated the patient and, as the toxemia increased it caused the headache. Likewise the overexertion was the result of a false stimulation.

Oftimes there may be some indigestion, sour stomach, heartburn, belching, rumbling, or abdominal uneasiness as the intoxication becomes more marked. It is not uncommon for the patient to have one, two or more bowel movements during the stage of stimulation, and for that reason be convinced that there was no possibility of intestinal intoxication. These same people are amazed to find the mass of fecal material removed by enemas or laxatives after such bowel movements. The flatus and stools often have very offensive odor. There may be a bad breath, a fetid taste and a coated tongue in the stage of stimulation and usually in the period of intoxication.

The period of stimulation merges into that of intoxication. The line of demarcation between the two stages is not definite, as each individual reacts somewhat differently. A few patients have depression as their premonitory symptom. They become listless, dopy, have a coated tongue, a bad breath and some indigestion several hours before the onset of the headache. This group of cases, however, is quite small, but should be recognized just as readily as those who are stimulated.

Oftimes the patient retires feeling splendidly and awakens in the stage of intoxication. There is a dull headache, which is usually frontal or occipital, but may be unilateral or bilateral. The pain is most often throbbing in character, but may be a dull, heavy ache, which is aggrevated by noises, jarring and sometimes by light. There is frequently a vertigo and sometimes this is quite marked, amounting to slight faintness. This vertigo comes on irrespective of position and is not intensified by rotating the head or body. Flashes of light, dust particles, webs or various figures are frequently observed floating in the field of vision. These scotomas may also be observed during the stimulatory stage. The tongue is coated. There is a bad taste in the mouth. The patient feels dull, listless and stupid. There is usually nausea, vomiting and a throbbing, "bilious headache." The patients speak of these attacks as "bilious spells." The vomitus at first contains sour fluid, with or without food particles. Later the vomitus is bile-stained or rich in bile content. The nausea, vomiting and headache may last from a few hours to several days, depending of the severity of the attack.

Because of nausea, vomiting and anorexia, little or no food is ingested and gradually the attack wears off. These patients learn to starve themselves as soon as such an attack starts, for in so doing experience has taught them that the duration of the symptoms is shortened. It would seem that there was only a limited amount of the poisonous material in a given amount of food residue, and, when that supply was exhausted, relief followed.

It is true that certain patients obtain instant relief from their symptoms by enemas and such quick relief lends some support to the mechanical theory of the causation of this sort of attack. The mechanical explanation, however, cannot be reproduced by any artificial means available, while it is readily possible to produce the headache by constipating the patient.

One hundred private cases, who have been symptomatically relieved, have been studied in this review. The ages vary from four years to eighty. The duration of headache attacks has varied from a few months to fifty years. The frequency of the attacks has likewise varied from an attack every two or three days to one every month or two. Several have been included who have had continuous headaches for as long as five years, with acute exacerbation in which they would be confined to bed from one to three weeks at a time.

Only five children under ten years have been studied and followed and these in consultation. It is interesting to note that each had been under the care and management of excellent pediatricians for as long as three years previous to observation. All had been diagnosed as acidosis patients and treated accordingly. Each child presented the clinical features described above in the stimulation and depression stages. Each child was completely relieved of attacks when placed on a suitable laxative diet, etc.

There is a small percentage of headache cases, who are apparently not constipated, in that they have regular, daily bowel movements. On careful motility study, by means of the x-ray, it has been shown that these patients have regular evacuation of the bowels, but that there is a large residue remaining in the colon forty-eight, seventy-two and even ninety-six hours after taking the x-ray meal. This group of cases has been classified in a previous communication as "Delayed Bowel Movement Type of Constipation." In a study of five hundred cases of constipation, twenty-five fell into this class. Five of them had constipation headaches and are included in this report.

The recognition of the stimulatory and depressatory symptoms of constipation headaches, as described, are of great value as a diagnostic aid in the differentiation of the type of headache. The stimulation stage has not been observed in any other form of headache. The observation of the stimulatory symptoms before the attacks of headache, in this study, has shown that it does not occur in other forms of headache. There may be constipation headaches, preceded by depression, or the stimulation may occur at night and be unobserved, but when present it indicates an intestinal intoxication. After the correct diagnosis has been made, suitable diet and laxative measures should be instituted to prevent headache. No matter how carefully planned such a regime may be, the patient will occasionally have an attack, and for this reason should be taught very carefully the various stages thru which they pass.

The observation of the premonitary symptoms of constipation headache is of greatest value in prophylaxis. If it is possible for the patient to recognize the stimulation stage, and the occasional depressive stage which precede the headache, suitable treatment will prevent the headache. This treatment must be instituted as soon as the prodromal symptoms appear and should consist of immediate evacuation of the bowels by means of an enema or purge. The patient soon learns that, if this procedure is carried out early, the "bilious attack" does not develop. He soon finds that, by increasing the elimination only moderately during the stage of stimulation, the stage of intoxication can be avoided.

In conclusion, the following points should be amphasized:

1. The cycle of constipation headache passes thru two stages: (a) Stimulation, (b) intoxication.
2. The recognition of these stages is of diagnostic value.
3. The institution of therapy during the stage of stimulation is of prophylactic value.

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POISON OAK DERMATITIS

This toxin has an established place in the therapy of Poison Oak Dermatitis and in the immunization against the same as shown by hundreds of letters from physicians, etc.

So many inquiries are being received regarding this treatment that we are here summarizing some of the data gleaned from the medical literature for the benefit of our numerous correspondents. It is recommended that those having access to the literature read the articles by Schamberg (Journal A. M. A. 68:87 January 13, 1917, and October 18, 1921, page 1213), Strickler (Journal of Cutaneous Diseases June 1918 and Journal A. M. A. September 17, 1921) and H. E. Alderson (California State Journal of Medicine, October, 1920, and May, 1921).

It is not a secret proprietary article but can be made by any competent chemist having access to a fresh supply of the plant. We feel that our product is superior, however, because it is tested for toxicity, etc. Alderson reports no serious untoward effects following the injection out of several hundred patients treated by him. A few have felt faint but this was attributed to the psychological causes. It is extremely important to give the injection intramuscularly and not subcutaneously or intravenously. He has also observed greatly increased tolerance or immunity following the oral administration, in ascending doses, of the "Immunizing Mixture" preceded by an injection of the concentrated extract. Many letters and verbal reports from physicians all over the coast testify to its effectiveness in producing an active temporary immunity. This immunizing treatment is recommended once a year but the injection is not urged.

INSTITUTIONAL TREATMENT OF TUBERCULOSIS*

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The fact that tuberculosis, in spite of all efforts made by science and society during the last decades to wipe it out, is still one of the most far-reaching plagues of mankind, and that, the more information we get on this disease, the less possibility there seems to be of finding the therapia sterilizans magna for it, urges us to continue to build up and to advertise the only way and method which has yet proven successful, and that is institutional treatment.

The era of the organized fight against tuberculosis, in which science, society, charity instiutions and governments take part, dates from the time when sanatorium treatment had shown its efficiency. Tuberculosis, as Stewart says, is more a social than a medical problem; sanatorium treatment approaches this problem from both angles; all our other weapons in the war against tuberculosis, such as clinics, dispensaries, leagues, and tuberculosis nurses are the outgrowth of the sanatorium, and cannot work efficiently, unless in connection and with the aid of such institutions.

Institutional treatment of tuberculosis can be divided into five main topics, and I will herein treat each division individually:

1. *Change of environment.* The wholesome effect of a change of environment for every chronic disease has been known for centuries. To take a patient away from the anxieties and temptations of business and home, from the conflicting advice of friends, from the diagnostic and prognostic opinions of neighbors and visitors can be considered the first step in therapy.

The atmosphere of a well managed tuberculosis sanatorium should be characterized by two essentials, quiet and hopefulness. The important part which the psychic impression plays in the treatment of the erethitic tuberculous patient can be made far better use of in the sanitorium than in the home. The mere conception instilled in a patient on entering a sanatorium, namely, that the whole institution, all its workers and equipment, are there for the sole purpose of curing patients of his kind; that he is entering into a system which has been proven successful in cases similar to his own; that his struggle for health, his wanderings from one doctor to another, from one remedy to another, have found an end, and that by simple passive obedience to regulations and treatment he is going to get well without much active effort on his own part; this very conviction, which is undoubtedly created in the average patient on entering a well managed institution, is the fundamental part of his psychologic treatment. I am certainly not in favor of attributing too much value to psychotherapeutic stunts so much in vogue nowadays, but in dealing with a so eminently chronic disease, which so greatly influences the social life of the patient and of his family, and in view of the effect the mere idea of being consumptive has upon the mind, we cannot neglect the psychic side of the treatment, and must endeavor to keep the patient in a hopeful state of mind in order to get his necessary cooperation.

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* Read before King County Medical Society, Seattle, Wash., May 12, 1923.

Another important item is his education to regularity and conscientiousness in carrying out the required regime. He should be informed of the modern views of treatment and prophylaxis of tuberculosis, but it is unnecessary, and in fact rather dangerous, to fill him up with anatomic and other medical details which he cannot properly understand. Hazy knowledge creates hypochondriacs.

Connected with a change of environment is very often a change of climate. There is no climate which is of specific value for the treatment of tuberculosis. Proper regime and treatment will bring about the same results in any climate. The so-called all-year-round climate by itself has no favorable influence upon the consumptive who is not under treatment. The mortality rate of tuberculosis in this country shows the lowest figures to be in Detroit and Cleveland, the highest in San Francisco and New Orleans. Otherwise it must be admitted that the stimulating effect of a mountain climate, the dry soil, the stronger and longer insulation are good climatic conditions for all nontoxic cases with good resistance power.

2. *Principle of Isolation.* Institutional treatment from the standpoint of isolation is another very important topic. Two of the scientific standpoints concerning the source of infection are changing of late. One is the principle of Cornet and his school, that the tuberculous sputum, especially in its dried-out condition, is usually responsible for infection. We are now inclined to believe that Flugge's theory, the droplet infection, is nearer correct. Not the visible but the invisible sputum is the dangerous thing. Experiments carried out by Hippke and by Seyffert prove this very definitely. The coughing consumptive himself is the danger, not the sputum.

Hamburger proved in several cases that being together with a consumptive for a short time, sometimes possibly for only a few hours, is sufficient to infect children who were previously free from tuberculosis. Souleyre found that contact with a bacilli spitter, anywhere from one to fifteen days, might prove a deadly infection to infants. He also reports a case of a twelve year old boy who received a fatal infection in thirteen days. This leads us to the other changing standpoint regarding infection. I refer to the prevailing belief that tuberculous infection occurs only in early childhood. This I agree is certainly the rule, but there are many exceptions.

Tillich gives interesting statistics on this point. He found that, out of 94 widows and widowers who became sick with tuberculosis, 47 per cent were cases wherein either the wife or husband respectively had died of tuberculosis. He concludes therefrom that in most of these cases infection had taken place during the course of married life. One thing is certain, however, that only a very massive infection is dangerous to an adult. At any rate, these considerations prove the necessity of strict cough discipline, and the value of isolation of the tuberculous patient, the coughing patient himself in most instances being the source of infection.

3. *Diagnosis.* Another view point in favor of institutional treatment is the better possibilities of making diagnosis. X-ray and microscopic laboratories in the hands of people especiall yskilled in this work, a well experienced tuberculosis specialist and close observation for a certain period of time, tend to secure a proper diagnosis. We all realize the vast importance of early diagnosis in tuberculosis, but the odds against it make it a rather difficult problem. There are several methods being worked out, which as yet are not strictly reliable, but when completed promise us the possibility of making a true diagnosis in any doubtful case.

I have reference to the urine reaction as recommended by Wildbolz, a similar reaction with the sputum submitted by Maniscalco and the method of complement fixation. But, in order to make the information obtained from these procedures valuable, they must be done frequently and the facilities can be found only in an institution. From the various laboratory methods which were supposed to give information on the prognosis of a certain case, there is only one which seems to be reliable—the urochromogen reaction of Weiss.

4. *Therapy.* The most important consideration in favor of institutional treatment is the possibility of applying the right kind of treatment in the most proper environment. Rest and fresh air, the foundation of tuberculosis cure, can be given to the patient nowhere to such extent and regularity as in an institution built especially for this purpose. The principle of keeping the patient permanently in fresh air regardless of the weather can be overdone. In our climate it is not possible to keep patients of various stages with or without fever, all year round on sleeping porches or in screened in cottages. They should have, at least during the winter time, sleeping quarters which can be closed during the night, and a balcony onto which the patient can be brought out with his bed during the day. Patients without fever can be allowed to take their rest cure in specially constructed air halls in the company of others, which will make the otherwise rather lonesome and tedious regime easier to carry thru.

The patient should lie as flat as possible on his back in order to obtain a good lung hyperemia. Only those with a weakened right heart need a more upright position. Breathing exercises can be taken only if the foci are healed up entirely. The same principle applies to gymnastic and graduated work. Both principles are more important for the public institutions. Patients seldom stay in private sanatoriums long enough to get to this stage. Hydrotherapy, which strengthens and hardens the skin by giving the vasomotors a sort of gymnastics, can also be carried out with greater facility in an institution than in a home. A cold rub in the morning is one of the most effective hydrotherapeutic procedures. A cold compress around the chest, especially in advanced cases, will quiet respiration and the action of the heart, and facilitate expectoration. The same is true of the air bath.

The importance of a proper dietetic regime cannot be overlooked. Certain forms of tuberculosis, particularly intestinal and laryngeal, require a special diet according to the changed condition of digestion in the former and of deglutition in the latter.

One of the most valuable acquisitions to phthisiotherapy, which has been added during comparatively recent years, is heliotherapy. Heliotherapeutic results obtained everywhere, in almost any climate and any altitude are so excellent that tuberculosis of bones, joints, glands and skin have been taken away from the surgeon almost entirely. The conservative treatment with sunlight and artificial light give not only better results as to future function of the diseased part but also as to the general condition of the patient. The plaster of paris cast is in most cases a thing of the past; strict immobilization is considered unnecessary; rest, unburdened bones and joints, and sunshine bring about the ideal cure. Tuberculin, Bier's stasis, and iodine are used in combination with heliotherapy.

French authors are enthusiastic about the results obtained with heliotherapy in tuberculosis of the lungs. However, sunlight treatment is rather dangerous in cases where there is a tendency towards fever, tachycardia or hemorrhage. I have had possibly half dozen cases of Pott's disease with lung tuberculosis complication under heliotherapeutic treatment, ranging from a period of one to three years, and, tho the lung in these cases was exposed to sun and artificial light at the same time as the spine, I never noticed any marked influence on the process in the lung.

As yet we do not know just how the light works. Guavain thinks that the pigment changes the short wave rays into long wave rays and thus permits them to penetrate into the depth. Schroetter thinks that the pigment acts as a collector, transforms the energy of the rays into chemical energy, and increases the inner secretion of the skin. It is certain that at least a part of the light effect is accomplished by means of the skin. Muller and Fischel observed that heliotherapy increases the cellular immunity, when tested with partial antigens.

As to results, Hill and Campbell state, in an article in the *British Medical Journal,* that the metabolism of children undergoing heliotherapy increased 40 per cent above standard. Collins offers these statistics: 160 advanced surgical tuberculosis cases, treated with only dietetic measures for several months duration, resulted in 27 improvements, 111 no change, 22 worse. He added heliotherapy to the other measures and after five months treatment reports 108 cures in the same cases. From the extensive literature existing on this topic I will mention only Lo Grasso, who, in the environment of Buffalo, in an altitude of only 1500 feet, reports over 66 per cent definite cure in 653 cases of surgical tuberculosis. It seems useless to stress the point that systematic heliotherapy can be carried out in most cases only in an institution.

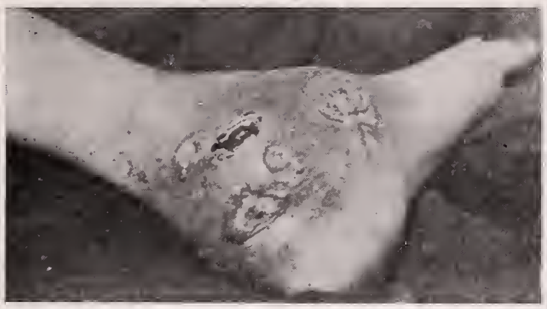

Fig. 1. Tuberculosis of left ankle.

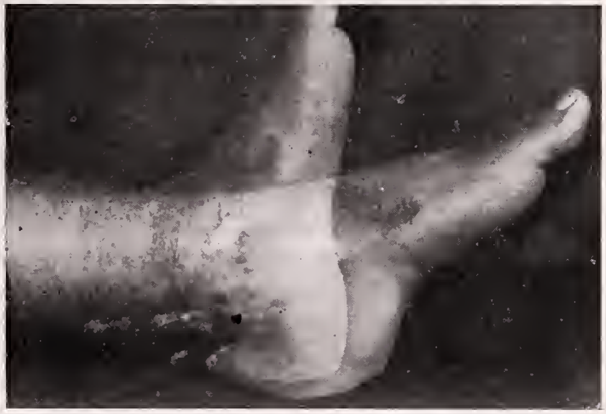

Fig. 2. Improvement aften ten months heliotherapy. The photo also shows the restored function of the ankle joint.

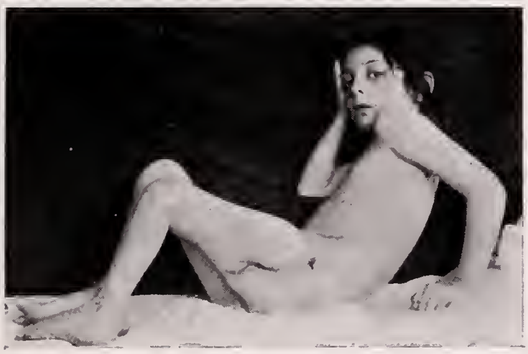

Fig. 3. Tuberculosis of the left os pubis. Ankylosis of the left knee.

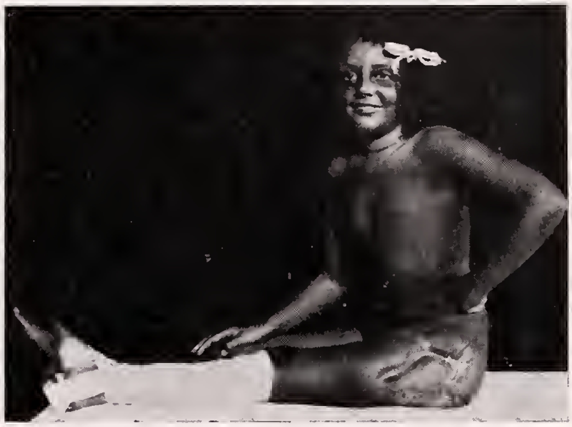

Fig. 4. Improvement after four months heliotherapy.

Closely linked to heliotherapy is x-ray treatment of tuberculosis. There is no doubt that in cases of adenitis, tuberculosis of the sexual organs and of the eyes, x-ray treatment does give good results. Manoutchine's method, recommended by Frankel and Rechou, is worth mentioning. He irradiates the spleen and marrow bones with x-ray for the purpose of increasing lymphocytosis.

On tuberculin therapy, which plays an important role in institutional treatment of tuberculosis, I will briefly state that all specialists who used tuberculin on a large scale and became familiar with the remedy, report good results and are in favor of it. There is no doubt that the institution with its possibilities of close observation and strict control is also the ideal place for the administration of this treatment.

I shall also be brief on the subject of internal medication. This must not necessarily be carried out in an institution, and is otherwise more or less symptomatic. The days of creosote therapy are over, and we no longer believe that we can bring about a cure of tuberculosis by internal medication.

Seldom has a new treatment been recognized everywhere as unanimously in a relatively short period of time as has artificial pneumothorax. This phase of treatment certainly has its merits. It is a life saver to many who would otherwise be lost, or who would be forced to succumb to a difficult surgical operation. It has, of course, been used too promiscuously, but any mechanical medical method always will be.

Artificial pneumothorax should be commenced only in an institution under strict x-ray control before and after each refill. If the pneumothorax is started, then it must be continued for at least two years and should, if possible, be combined with rest cure and tuberculin therapy. The latter is necessary, because in many cases the collapse as such is not sufficient to bring about healing, if for some reason the specific reactivity of the organism has not improved.

We must bear in mind that no mechanical measure can bring about cure in tuberculosis, that only immuniologic action by the organism can do it. The mechanical procedure creates suitable conditions in the body for favorable reaction. Should this reaction fail to occur, it is necessary to enlist aid, either through general treatment or vaccination, or possibly both.

The last few years have brought quite a development in surgery for lung tuberculosis. This is not a very common treatment, as the indications for it are very limited, the technic difficult, and the mortality rate still high. But in view of the astonishingly encouraging results reported by Sauerbruch, Brauer, Wilms, Schreiber and others, I foresee great possibilities for the institutional treatment of surgery for advanced lung tuberculosis. It is unnecessary to say that surgery of the lungs can be accomplished far more successfully in a special tuberculosis institution outside of the city, where fresh air and heliotherapy will be of valuable aid in the postoperative treatment.

In many cases of laryngeal and urogenital tuberculosis conservative institutional treatment, combining rest with heliotherapy, x-ray and tuberculin therapy are sufficient to bring about favorable results. On the other hand, we must admit that surgery will do quick and good work, especially in cases where the lungs are little or not at all affected. It is of greatest importance, of course, not to neglect general treatment, particularly in the postoperative stage . Rest, heliotherapy and tuberculin will complete the work of the surgeon, and it is in dealing with such cases of operated urogenital tuberculosis, wherein institutional treatment is of great value.

I shall not omit mentioning graduated work, which was inaugurated by Patterson and Inman, at the Frimley Sanatorium in England. Here they went so far as to prescribe, under control of the opsonic index, an amount of work which would even cause a slight raise of temperature. Their good results are based upon autotuberculinization. This treatment has been carried out very systematically both in England and in America. Among other institutions, Saranac Lake has a school for artcraft and a medical school for tuberculous medical students.

R. S. Prophylaxis. The sanctorium plays a twofold role in the prophylaxis of tuberculosis. First there are those institutions which should be organically connected with and backed by a tuberculosis sanatorium. These are the dispensaries and tuberculosis nurses. There is, further, a kind of institution established for the purpose of caring for the people endangered by tuberculosis. These are recreation homes for undernourished children afflicted with scrophulosis, anemia or enlarged bronchial glands, also recreation homes for adults who have not the opportunities offered by a sanatorium, or who after sanatorium treatment found it necessary to go to work before they were fully recovered. Such halls are situated close to or even within the limits of large cities and give children and adults, who live in crowded poor quarters, and who have no opportunity for care at home, a chance to be in the open air for a part of the day, to take the necessary rest, to receive advice, and to be under control of nurses and physicians familiar with tuberculosis work.

In connection with prophylaxis of tuberculosis, I wish to mention the high importance now attributed to tuberculosis of the bronchial glands. Bronchial gland tuberculosis carries with it the danger of spreading the disease by means of the blood or lymph stream, but the enlarged glands themselves may cause such symptoms as temperature, night sweats, loss of weight and dry cough. If in such condition, the child should be brought under sanatorium treatment and receive the necessary heliotherapeutic measures.

We must keep in mind that it is from these very cases of tracheobronchial adenitis in their later stages, from which the army of consumptives gets its recruits. The diagnosis of enlarged bronchial glands, even in the absence of clinical symptoms, can be made with the aid of the x-ray and certified by the Petruschky sign, that is, the sensitiveness of some of the spinal processes, the Craemer's dullness in the interscapular space, or the d'Espine sign. Koranyi claims that dullness over the fifth thoracic vertebra is a sure proof for bronchial adenitis.

While many cases do not show any symptoms, nevertheless there should be created possibilities for these children to get rid of their bronchial gland enlargement. This could be done by bringing them to beach or mountains during the summer months, and in the winter time keeping them for a short time daily in large halls simultaneously lighted by quartz and coal arc lamps, thus treating them with artificial light. Such halls would be of special benefit in countries like this, there being insufficient sunshine during the winter months.

The following are a few statistics showing the importance of our combat with tuberculosis:

There are in the U. S. 340,000 registered cases of manifest tuberculosis. The total number of tuberculous people in this country is in minimum figures estimated at 1,400,000. In this country 140,000 people annually die from tuberculosis, while the total loss of the American army during the World War was only 70,000. Tuberculosis is the cause of one death out of every two which occurs between the ages of 20 and 35.

Tuberculosis can be cured in the midst of a great city. That is true, and has often been done everywhere, but we cannot rely upon this, because we are not able to make an exact prognosis in every single case.

The most experienced man will make mistakes occasionally wherein prognosis is concerned. That for psychologic reasons some cases are not fit for sanatorium treatment I will admit, but in the majority of cases we must consider sanatorium treatment the most effective for tuberculosis of all forms.

BASAL CONDITIONS IN THE ESTIMATION AND INTERPRETATION OF THE BASAL METABOLIC RATE*

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Much has been said during the past few years concerning basal metabolism. The review of the literature presents very little reference to basal conditions necessary for the estimation of the metabolic rate. Upon these basal conditions hinge the accuracy of the results. Moreover, they are the factors so often disregarded. Furthermore, the test is being used more and more by a larger number of the profession, both directly and indirectly. But aside from the relatively small number directly engaged in the actual work of basal metabolimetry, only a few understand the various conditions which must be fulfilled for the securing of a true basal rate. In view of these facts, it has seemed appropriate to emphasize certain factors.

The basal metabolic rate is simply a measure of the anabolic and catabolic body processes at the lowest level compatible with life. This is usually measured by comparing under basal conditions the oxygen consumption with the carbon dioxide excretion over a certain fixed period of time. The expression, basal conditions, means the removal of the stimulating effect of food absorption for at least fourteen hours previous to running the test and freedom from all muscular and mental activity. Absence of food absorption is obtained by directing the patient to eat no breakfast the morning of the test and to eat only a light supper the night preceding. Direct questioning of the patient regarding this point often discloses that he ate no breakfast but drank a cup of coffee. Caffeine will appreciably stimulate metabolism. All medication should be stopped fourteen hours before the test to remove the possibility of its effect. It is obvious that, unless the therapeutic effect of thyroxin is being tested for a subnormal metabolism, its use should not be followed by metabolic rates for diagnostic purposes for at least two to three weeks after stopping it.

Freedom from mental and muscular stress can be obtained only by carrying out certain conditions. A quiet room in a hospital is ideal, or, if this is not available, a small office room fitted with a comfortable bed is the next best environment in which to carry out true basal rate estimations. An uncomfortable examining table will often cause the patient to squirm and twist and prevent relaxation. An accurate estimation can not be secured when the test is run in a ward, where are apt to gather doctors, nurses and convalescent patients. If it must be done thus, the bed should be screened. Failure to observe the above conditions excites varying degrees of nervousness and frequently accounts for a plus 20 or 30 per cent reading in a patient clinically free from a hyperthyroidism, or for a much higher rate than expected in a clinically proven thyroid dysfunction.

Even with the above factors under control one is often unable to obtain freedom from mental stress. The nervous patient anticipates too vividly, he worries the night before the test and perhaps does not sleep well and he comes in the morning under a nervous tension which does not leave even with the preliminary rest period. He sees with apprehension the formidable apparatus with the breathing tubes, masks or mouth pieces and the oxygen tank, and he associates the test with gas anesthesia, or he may have heard from another nervous patient that a sense of suffocation accompanies the breathing.

The only remedy for this distressing condition which precludes a true estimation is to take the patient thoroly into one's confidence, explain fully and simply the operation of the test and assure him that there is no discomfort or danger connected with it. Usually this suffices to prepare the patient. Patients are occasionally sent to a laboratory with a request for a metabolic rate just as one would refer a patient for a routine blood Wassermann test. As a rule, these patients are inadequately prepared for the work and have no idea of what is to be done to them. As a result, basal conditions are not present and are hard to obtain. The result is worthless, as far as diagnosis is concerned. We can not emphasize sufficiently the importance of carefully studying these patients in a hospital under control with repeated tests on several days, until one is entirely satisfied that all basal factors are controlled.

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* Read before Portland City and County Medical Society, Portland, Ore., Apr. 18, 1923.

Reassure the patient as much as possible, he begins the test the following morning nervous. The basal rate of these borderline cases, the neuroses, where a palpable thyroid is present and where one is especially anxious to exclude it as an etiologic factor, can only be obtained by repeated estimations.

H. M. Jones states that, in the process of determining the metabolic rate by this or that method, the final result is obviously and always the algebraic sum of the plus and minus errors from at least three widely different sources, namely: the test subject, the technician and the apparatus. They share unequally in the result. It is our opinion, however, that, providing our technician is one upon whom we can absolutely rely, providing the machine is tested before and after each test and is mechanically perfect, the burden of error in results will fall upon the patient's lack of cooperation. This may or may not be voluntary. With the first two factors controlled, the patient becomes the greatest variable. As a general rule, however, taking the average of all technicians using all types of apparatus, the first two factors will probably be responsible for at least 70 per cent of the inconsistent results. It is the duty of the technician to know whether the apparatus is in perfect running condition.

It has been our custom as a routine in borderline metabolic diseases, where the thyroid is suspected, to run the metabolic rates on every other day for three days or more if necessary. The results of this sort of procedure have grouped themselves rather naturally into three classes. (1) A daily agreement of the rates within certain limits. This has been graphically shown on chart 1. (2) A daily reduction occurs until a normal is reached (chart 2). (3) A wide variation is found to exist in the rates on each day and on the several days (chart 3).

The first group affords a positive diagnosis. That is, for example, the first day's rate is plus 30 per cent, the second plus 33 per cent and the third plus 29 per cent. We believe that with this agreement a hypersecretion of the thyroid exists, excepting a small group to be mentioned later.

The second group can best be illustrated by a typical history, shown graphically on chart 2.

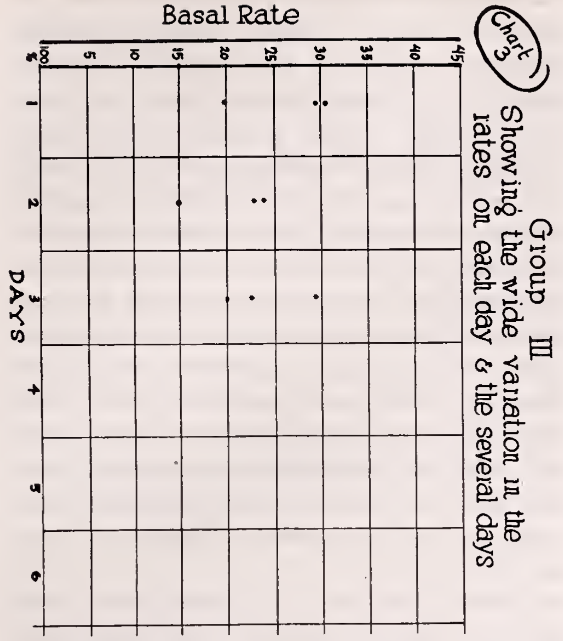
Case No. 3040. J. C., female, age 32, single, complained of various gastrointestinal disturbances, weakness, nervousness and loss of weight. She was a profound asthenic type and had a moderate increase in the thyroid gland. She was found to have an achylia which with her general physical type explained her gastrointestinal symptoms. No other abnormal findings were discovered in a complete examination.

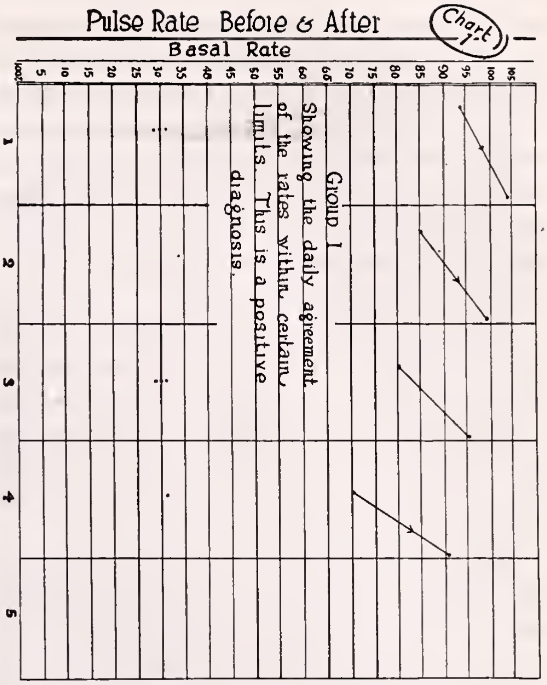
She was put into the hospital for study. The first metabolic rate was plus 49 per cent. We did not consider her thyroid responsible for this abnormal rate. Three rates run on the same morning agreed within .4 per cent. With rest in bed and under general physical reconstruction work, including exercise, the basal rate dropped to plus 24 per cent in sixteen days, to plus 20 per cent twelve days later and to plus 5 per cent in four days. The thyroid showed no appreciable diminution in size. The drop in oxygen consumption occurred during the period of daily active work in the gymnasium.

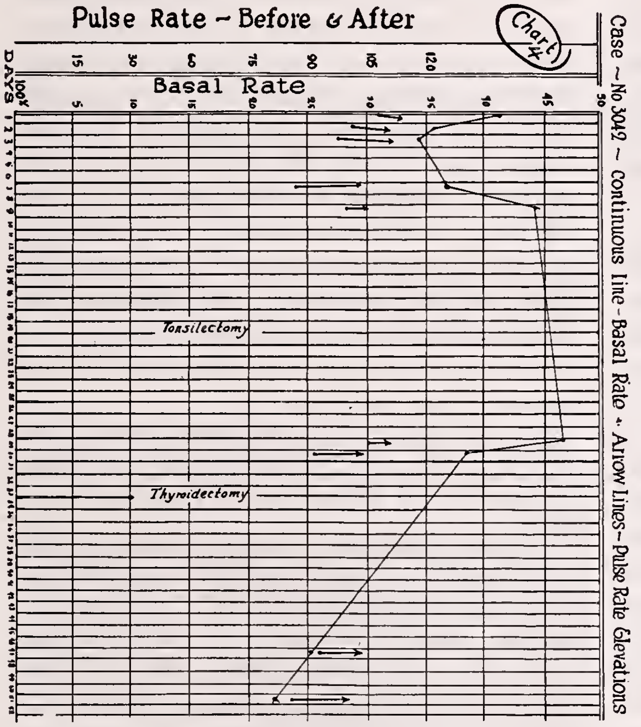
The subsequent history showed no return of symptoms. As a general rule in this type of patient, the return to a normal metabolic rate is very much more rapid than the one cited.

Into the third group we can place the relatively few patients, in whom we are unable to obtain either mental or muscular relaxation. This accounts for the wide variation in results. Such patients are continually up and down, now partially relaxed, now tense. Basal conditions are never completely fulfilled. Therefore, a true basal rate is difficult to obtain.

Muscular rest for at least thirty minutes before the test is begun is essential to remove the oxidative effect of muscle catabolism. The best results are obtained by having the patient remain in his bed in which he has slept all night and to begin the work soon after he awakens. Recently Bailey, of New York, has advised the use of a wheel chair. It is unreasonable to suppose that there is not a certain amount of muscular tension in this position. Any persistent muscular activity during the test makes the estimation worthless.







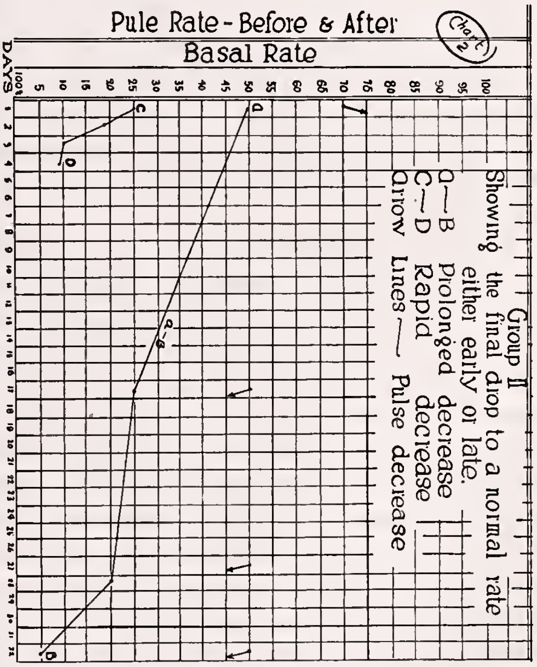


CHART 1. The dots represent the metabolic rates in percentages above normal. The arrow lines show the increase in the pulse rates after the test is finished. The basal rate averages very closely on each day.

CHART 2. The lines A-B and C D represent the basal metabolic rates in percentages above normal. C D is the usual decrease; A-B, case number 3042, or the prolonged one. The arrow lines represent the drop in the pulse rate after the test is finished.

CHART 3. The dots represent the metabolic rates in percentages above normal. There is a definite disagreement in the rates on each day and the several days. No clear cut diagnosis can be made from this type of results.

CHART 4. The basal rates are shown in percentges bove normal. The arrow lines show the increase in the pulse rates after each test.

The respiratory, but more especially the pulse rates before and after each test are frequently reliable indices of the degree of nervousness and are, therefore, aids in determining the true significance of the test. Frequently they are increased appreciably before the test is begun but are normal after it (see arrow lines on chart). The second test is preceded as a rule by no such rise. The first basal rate may be plus 20 per cent, the second plus 8 or 10 per cent, showing definitely that the patient has relaxed. Obviously, patients with clear-cut toxic goiters do not present this secondary slowing (see charts 1 and 4). The pulse rate is more frequently increased with the second reading in hyperthyroidism.

Insufficient removal of carbon dioxide in closed circuit machines will produce visible dyspnea, give the patient a sense of suffocation, exaggerate respiratory effort and hence defeat a true basal reading. Such carelessness of a technician is ordinarily shown in more gross errors so that the results are not to be depended upon.

The time of the day the test is run influences the reading to some extent. The most consistent results are obtained by doing the estimations during the morning, never in the afternoon. The metabolism apparently slowly rises during the day; therefore, tests carried on during the afternoon are usually higher than those run in the morning. The influence of withholding food for such a long period of time, plus a certain amount of activity during the day, must play a part in this.

Certain uncontrollable factors make the estimation of a basal rate impossible. Fever, various degrees of obstruction of the upper respiratory tract and decompensated heart are the chief ones. Fever, even of low grade, is accompanied by increased oxidation and, therefore, an elevation of the metabolism. Hence, it is a wise precaution to take the temperature before the test is begun. A temperature of 99.6° will occasionally be discovered in subacute respiratory infections, where no fever is suspected. Interference with free breathing by large tonsils, adenoids or the local edema of an acute coryza will increase the rate due to added respiratory effort. A definitely decompensated heart, producing cyanosis, dyspnea and passive hyperemia, will result in a moderately increased metabolism. The rate is also moderately increased in pregnancy, severe anemia and leukemia. The rate varies in diabetes according to whether there is an existing ketosis which will alter the respiratory quotient.

Until the very painstaking work of Blunt and Dye, on college women at the University of Chicago during and between the menstrual cycle, it was generally believed that the metabolic rate was increased during the menses. The work of these observers for more than a year's time, on the same time thru the various seasons, proves that there was no decided variation at the menstrual periods.

The indications for the estimation of the metabolic rate are too well known with few exceptions to be worth more than brief mention. The proven value has so far been limited chiefly to quantitative and qualitative work with the thyroid secretion. In an outstanding thyrotoxicosis, the surgeon may learn whether he may immediately do a thyroidectomy or wait a week and do a ligation safely, if he studies the patient's metabolic rate carefully along with his clinical observation, knowing, however, that the former is a more accurate index of the degree of hypersecretion than the pulse rate and weight curves.

The aid in determining the etiology of a toxic heart action, especially in this locality where goiter is so prevalent, is striking. The quick, loud, almost booming heart tones, with the always present suspicion of a hidden stenosis or of absorption of pus from some foci, demand metabolic study under control. The finding of repeated, consistently increased metabolic rates has occasionally made us search diligently for a pathologic thyroid. The discovery of the hidden, substernal gland explains the increased rate. Removal of it with decreasing postoperative rates proves it.

The following abstract of a case history illustrates this very well.

Case No. 3042. M. D. H., male, age 56, complained of nervousness, weakness, loss of weight, tremor and heart palpitation for four months. Similar trouble had existed two and one-half years before.

Physical examination revealed considerable emaciation, septic tonsils, a very slight enlargement of the thyroid and a toxic type of heart action, that is, a loud booming tone all over the precordium but with relatively no increase in the second pulmonic tone. The blood pressure was normal as were the urine, the blood and the stomach chemistry. A very indistinct substernal shadow was seen on stereoscopic chest films. The borders of this were not sharply outlined and so we hesitated to call it a substernal shadow.

The patient was put into the hospital for study. The first metabolic rate was plus 42 per cent. The following day it had dropped to plus 36 per cent and the next to plus 34 per cent. Reference to chart 4 will show the subsequent history with the metabolic rates. Insofar as we were unable to palpate a definite suprasternal thyroid, and as the evidence of a substernal gland was not sufficient, it was decided to remove the tonsils and watch the effect. There was no decrease in the metabolic rate following this nor did the toxic type of heart action disappear. Another chest film was taken which revealed a more definite substernal shadow with a rounded lower border. It was then decided to remove this.

Five days following the thyroidectomy the pulse rate had returned to approximately normal but what was more striking was the quiet, soft type of heart tones. The gland removed was quite small and showed on microscopic section marked papillomatous hyperplasia of the epithelium. The metabolic rate subsequently returned to normal.

Hypothyroidism, whether congenital or acquired is a definite indication for metabolic study; first, for proof of its presence; second, the quantitative disease; and, third, the effect of the treatment with thyroxin. Altho myxedema may be recognized with some degree of certainty without a metabolic rate, the acquired type is diagnosed, on the contrary, in a decidedly haphazard fashion and consequently treated in the same way. A decreased thyroid secretion may be suspected, when a woman increasases rapidly in weight, becomes mentally and physically sluggish and perhaps develops an amenorrhea.

Suspected pituitary disease demands a check of the patient's metabolic rate. Altho it is not definitely proven, hyperpituitarism presumably will increase the metabolic rate. We have determined the basal rate in only one patient who presented any clear-cut acromegalic characteristics. She had a definite bony overgrowth of the face, hands and feet and rather definite changes in the sella. The thyroid was palpable. The basal rate was plus 30 per cent. The thyroid here could easily account for the increase of the rate.

SUMMARY

1. The securing of basal conditions in the estimation of the basal metabolic rate is emphasized.
2. The results of basal rate estimations are grouped into three classes. (a) Daily agreement in the rates, a positive diagnosis. (b) A daily reduction until a normal is reached. (c) Wide variation in the rates on each day and the several days.
3. The study of the pulse rate before and after each test is valuable in the interpretation of the true significance of the test.
4. The aid of metabolic rates in obscure goiter heart is emphasized by a case report.
5. The indications for the estimation of the basal rate are briefly discussed.

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THE USE OF INSULIN IN DIABETES MELLITUS*

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Sixteen months have elapsed since the first dose of insulin was administered to a human diabetic. This modern therapeutic aid is the result of a hypothesis first conceived in the mind of Dr. F. G. Banting in November, 1920. In May, 1921, with the aid of C. H. Best, Dr. Banting began his experiments in the laboratory of Professor J. J. R. Macleod at the University of Toronto, and in January, 1922, the first extract of the islands of Langerhans was used upon a human subject.

It was given the name of insulin and to prevent commercial exploitation was patented by the University of Toronto in Canada, the British Isles and the United States. Profits from its sale are to be used for further research. Eli Lilly and Company of Indianapolis were granted the rights of manufacture in the United States. Considerable credit is due the research department of this company under the supervision of Dr. G. H. A. Clows, ably assisted by Dr. A. L. Walters, for the further development of insulin, known here as iletin. They have cooperated with the medical profession in a highly commendable manner during this preliminary experimental period just past.

Iletin is now available at less than the original cost in quantities sufficient to meet all demands. It is more accurately standardized than in the beginning. In the very near future, according to a recent announcement, it will, with the permission of the University of Toronto authorities, be available to the general profession. It has been requested by those responsible for insulin (iletin Lilly) that, preliminary to general distribution to the profession, a word of caution be spoken in publications, in order that an efficient remedy may not fall into disrepute thru unfortunate results in the hands of those unfamiliar with its use.

Iletin is a powerful remedy; it acts directly upon the metabolism of glucose after active digestion and during storage and oxidation. It produces a marked lowering of the sugar level in the blood. The normal blood sugar level is .06 to .09. When this level is lowered to .045, reactions take place. These are manifested by weakness, sweating, slight tremors and acute hunger. Further lowering of the

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*Read before the Pierce County Medical Society, Tacoma, Wash., May 8, 1923.
From Virginia Mason Hospital.

blood sugar level causes convulsions, unconsciousness, and may cause death. These reactions are immediately overcome by prompt administration of sugar and not large amounts are required to relieve even rather severe reactions.

A satisfactory and safe plan of diabetic management, using iletin, will be briefly outlined. Limited space prohibits very great detail.

It is essentlal that each patient be thoroly studied clinically, using any diagnostic aids indicated to determine that a given case is one of true diabetes. One only need mention in passing the cases of secondary pancreatitis due to upper abdominal pathology, such as cholecystitis and penetrating peptic ulcer, the glycosurias of thyrotoxicosis, renal and alimentary glycosurias, pancreatic lesions as carcinoma, and other conditions, all of which must be differentiated from true diabetes mellitus. The sugar tolerance curve will be helpful in deciding between these conditions frequently differentiated with great difficulty.

The question is often asked as to which cases of diabetes should receive iletin. In general patients who can partake of a diet, made up of the dietetic elements, carbohydrate, protein, and fat in proper proportion, and in such quantity that their caloric needs are fulfilled, without showing glycosuria or a blood sugar level above normal, do not need iletin. Iletin does not cure diabetes. In the uncontrolled diabetic the damaged pancreas is overburdened far beyond its capacity. Before iletin was available it was often necessary to subject a patient to continued undernutrition to relieve the pancreas of the overload. Now not only can this overload be relieved by iletin, but a diet more normally balanced and of sufficient food value to meet the caloric needs of the patient can be given without further damage to the pancreas.

Many wonder, of course, if iletin will cure diabetes. This is a question which must be answered individually in each patient. Of course the milder the diabetes, and the shorter the time it has been present, the greater will be the chance of an ultimate cure. The pathology in the pancreas responsible for the syndrome of symptoms which constitutes the disease progresses when the diabetes is uncontrolled. This same pathology, if it has not progressed to complete degeneration, or any portion, or all of it, which has not progressed to complete degeneration, may regress partially or completely, but only when the disease is controlled, as evidenced by absence of glycosuria and a blood sugar level approximating normal.

It is essential as a matter of safety, and to simplify ease of handling, and also to insure the best results, that patients while having the diet and necessary dosage of iletin adjusted be admitted to a properly equipped hospital. Depending to some extent upon the severity of the disease, a fairly liberal or low dietary is administered on admission. In general, a diet of 1500 calories containing 40 to 60 grams of carbohydrate, a gram of protein per kilogram of body weight, and the balance of the calories made up with fat, is a fair average of the diet during the first few days. If the patient handles this diet without glycosuria, it may be increased. Twenty-four hour collections of urine are tested daily. When glycosuria appears it is controlled by iletin. This is administered by hypodermic in divided doses, the dose given about thirty minutes before each meal. The largest dose should be given in the morning and the smallest in the evening. Each increase in the diet requires an increase in the dose of iletin.

After the diet has been raised to the desired level, the urine remaining sugar free, the blood sugar should be watched rather closely. Any drop below .12 or .10 indicates that a decrease in the dosage of iletin should be made to prevent reactions. Also as conditions in the pancreas improve, more of the active principle will be generated by the patient, and on a given diet less iletin will be required. Ultimately a readjustment of the carbohydrate, protein and fat percentages of the diet is slowly made in so far as possible, so that these percentages may approximate those in the diet of a normal individual. At no time must the ketogenic ratio, which is the ratio of the total glucose of the diet to the total fat of the diet, exceed 1 to 1.5 or 1 to 2. The total glucose consists of all the carbohydrate, 58 per cent of the protein, and 10 per cent of the fat.

Education of the patient in methods of computing his own dietaries from diabetic food tables is essential. This is usually simple; it gives him a true conception of the value of adhering strictly to his diet, and permits him to make selection of foods, to employ a variety of dietaries and to practice substitution of one food stuff for another. Likewise it is essential that he understand the tests for urinary sugar and be able thus to keep check upon his condition. He must know the symptoms of slight reactions to iletin and be conversant with and have always at hand means of relief. This education of

Mrs. P. E. R.

Date		CH	PR	Fat	Cal	FLUID		Wgt	UR. SUG		D	A	BLOOD		CARB		KET	IL
						IN	OUT		Gms	%			SUG	CO_2	IN	OUT	RAT	
Feb.	27	30	44	140	1556	2500	5340	128	186	3.5	4	4	.37	32	69	187	1-1.9	..
	28	30	44	140	1556	3100	2330	121	75	3.2	3	4	.25	..	69	75	1-1.9	5
Mar.	1	38	44	125	1543	3090	2060	120	58	2.8	2	4	.25	34	76	58	1-1.6	9
	2	33	43	133	1501	2050	2153	121	40	1.9	2	4	.24	..	71	40	1-1.7	15
	3	28	43	135	1592	2160	1525	120	16	1.0	2	4	.24	47	66	16	1-1.9	25
	4	33	48	141	1569	1560	1550	120	25	1.6	1	2	..	..	74	25	1-1.9	25
	5	32	43	144	1592	2175	1765	121	13	0.9	T	1	.24	..	72	16	1-1.9	37
	6	30	45	140	1558	1785	1760	122	11	0.6	T	1	.21	..	70	11	1-1.8	50
	7	30	43	144	1585	1440	1730	121	8	0.5	0	T	.21	58	70	8	1-1.8	50
	8	30	44	144	1592	1575	1820	121	7	0.4	T	1	..	..	70	7	1-1.8	45
	9	29	43	141	1552	1800	1270	120	0	0	0	T	..	..	68	0	1-1.8	40
	10	36	60	158	1817	1816	850	120	0	0	0	T	.12	..	86	0	1-1.7	42
	11	30	60	158	1765	1785	1350	120	0	0	0	0	..	..	80	0	1-1.8	45
	12	42	62	163	1883	1290	1335	122	0	0	0	T	..	..	95	0	1-1.6	45
	13	40	61	161	1851	1830	1180	121	0	0	0	0	.08	48	91	0	1-1.6	42
	14	40	61	161	1851	1800	....	121	0	0	0	0	..	..	91	0	1-1.6	42
	31	60	70	190	2230	1800	....	138	0	0	0	0	.07	..	120	0	1-1.4	42
Apr.	14	70	80	190	2310	....	1700	147	0	0	0	0	.13	65	135	0	1-1.3	42

the patient is the most important aid given him by the physician. The average patient with intelligence sufficient to learn the above lessons is also sufficiently intelligent to administer his own iletin, but any change in the value or percentage of the dietary or the dosage of iletin must be made by the physician.

The above plan is varied somewhat in the management of severe cases, cases of marked acidosis, and of coma or threatened coma, and in children. Often the most spectacular results are obtained in these most severe cases. In the diabetic with an acute surgical condition, iletin is often the deciding factor between recovery and a fatal outcome.

The two case reports which follow are self-explanatory.

Mrs. P. E. R., aged 24. Knowledge of diabetes for three years. Entered hospital February 27, 1923. Losing one pound of weight per day. Polyuria of 5 to 6 liters, polydypsia, insatiable appetite, marked pruritis. The output of glucose was 187 grams on a diet containing 69 grams. Blood sugar level .37. CO_2 combining power of the blood 32 volumes per cent. Reactions for diacetic acid and acetone in the urine very strong. Marked clinical symptoms of acidosis. Left the hospital on the 16th day on a diet of 2000 calories, containing 90 grams of carbohydrate. On discharge a blood sugar level of .08. No evidence of acidosis. Two weeks later the patient was taking 2250 calories with a carbohydrate value of 120 grams and showed no glycosuria with a normal blood sugar level. She had gained ten pounds in weight. Her daily dosage of iletin (insulin, is 42 units.

Baby H. H., aged 20 months. Knowledge of diabetes for four weeks. Lost seven pounds in four weeks. Polyuria of 3 to 4 pints. Moderate clinical symptoms of acidosis. Output of glucose 28 grams on a diet containing 69 grams of carbohydrate. Blood sugar level 0.57. Strong reaction in the urine for diacetic acid and acetone. Figures as to percentage of glucose in urine and total grams of carbohydrate output are only approximate because of difficulty in securing complete twenty-four hour specimens.

Left the hospital on the 24th day on a diet of 1000 calories, containing 100 grams of carbohydrate. (These figures in the footnotes include the carbohydrate derived from protein and fat). On discharge blood sugar level .10. No evidence of acidosis. Urine sugar free and no acetone or diacetic acid present. Gained 2½ pounds in three weeks. Daily dose of iletin on dischare 16 units. On May first, the diet was 1250 calories and the dose of iletin 12 units.

On May 20, the weight is 32 lbs. Diet 1000 calories, containing 110 grams of carbohydrate and the daily dose of iletin 8 units. There is no glycosuria and the blood sugar level is .12.

In closing, mention must be made of remedies pseudoscientific in nature recently placed upon the market by the more mercenary houses with highly developed commercial instincts, to compete with iletin. There has never been anything good which has not been imitated. Names similar to insulin and iletin are misleading and at the present writing there is nothing administered by any means other than hypodermically which has any scientific or clinical value comparable with iletin.

Baby H. H.

Date		CH	PR	Fat	Cal	FLUID		Wgt	UR. SUG		D	A	BLOOD		CARB		KET	IL
						IN	OUT		Gms	%			SUG	CO_2	IN	OUT	RAT	
Mar.	26	45	37	34	630	1500	550	25	28	3.7	3	2	.57		69	28	1- .50	
	27	85	66	57	1117	2280	700	24	41	3.2	3	3			129	41	1- .40	4
	28	79	53	55	1023	1830	700	25	29	3.4	1	3			105	29	1- .50	9
	29	82	56	57	1065	1710	290	25	18	3.1	T	1			131	18	1- .40	14
	30	68	49	49	907	1695	380	26	20	3.3	T	1			101	20	1- .40	17
	31	79	54	55	1027	2040	360	26	21	3.3	0	T			116	21	1- .40	25
Apr.	1	96	65	69	1265	2130	385	26	12	1.8	0	T			141	12	1- .40	29
	2	79	54	55	1027	1860	785	26	20	2.5	0	T	.37		116	20	1- .43	29
	3	73	57	59	1051	1440	540	26	2	.4	0	0			112	2	1- .47	33
	4	70	59	58	1038	1530	600	26	3	.4	0	0			110	3	1- .48	31
	5	70	60	58	1042	1560	500	26	6	1.1	0	0			110	6	1- .48	31
	6	61	59	60	1020	1470	500	26	3	.6	0	0			101	3	1- .53	25
	7	60	57	60	1008	1440	500	27	0	0	0	0			99	0	1- .54	32
	8	76	58	60	1076	1440	600	27	2	.3	0	0			116	2	1- .42	23
	9	60	58	60	1056	1350	600	27	7	1.1	0	0	.12		110	7	1- .48	17
	10	61	58	60	1016	1365	600	27	0	0	0	0			100	0	1- .54	16
	11	60	58	60	1012	1320	600	27	2	.3	0	0			100	2	1- .54	16
	12	60	58	60	1012	1350	600	27	0	0	0	0	.05		100	0	1- .54	17
	13	61	59	60	1012	1350	600	27	0	0	0	0			100	0	1- .54	18
	14	67	64	65	1109	1350	600	27	0	0	0	0			111	0	1- .53	18
	21	67	64	65	1109	1400	700	28	0	0	0	0	.06		111	0	1- .53	18
	28	77	83	68	1252	1200	500	29	0	0	0	0	.14		132	0	1- .47	12

INDICANEMIA, AN EARLY AND VERY DEPENDABLE SYMPTOM OF RENAL INSUFFICIENCY [*]

Gustav Baar, M.D., F.A.C.P.

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This report is based upon 96 cases examined at the clinic of Prof. Wenckebach, Vienna, Allgemeines Krankenhaus. There were made 126 analyses for residual nitrogen and indican in the blood, simultaneously with the determination of the nitrogen and the indican contents of the urine. The nitrogen in the urine as well as in the blood was determined after the Kjeldahl method; the indican determination in the blood as well as in the urine was made according to the quantitative colorimetric method of Jolles.

The cases comprise: 2 acute nephritis, 7 chronic nephritis, 7 nephrosis, 13 nephrosclerosis (2 benign, 11 malignant), 1 tuberculosis of the kidney, 20 passive hyperemia of the kidney, 3 uremia, 1 hypertonia, 1 hypernephroma—total, 5 kidney cases; 9 diseases of the liver, 22 primary heart affection (most cases included in the above item of passive hyperemia of the kidney), 15 stomach and intestinal diseases, 4 pernicious anemia, 1 leukemia, 2 lead poisoning, 4 emphysema, 2 pulmonary tuberculosis, 1 fetid bronchitis, 2 diabetes, 1 mediastinal tumor, 1 myxedema—total, 41 cases.

1. The relationship between azotemia, indicanemia and indicanuria. The claim of Rosenberg's that increased indican of the blood is produced by azotemia is not in accordance with my findings, because I have found increased blood indican in spite of a normal amount of residual nitrogen in the blood. This fact refutes the claim of Rosenberg that mere azotemia is responsible for increased blood indican.

2. The claim of Rosenberg's that increased blood indican is caused by resorption of indican, formed in excessive amounts within the intestinal tract, is also refuted, because I found excessive amounts of indican in the urine and only very little in the blood of the same person; on the other hand, I found excessive blood indican and only very little urinary indican in other cases.

3. Indicanemia, therefore, is not caused by increased azotemia in nephritics nor is it caused by increased formation of indican within the intestinal tract, but it is caused by retention. This retention in the blood takes place because the diseased kidney tissue meets the various nitrogenous products, destined for elimination, with various specific secretory difficulties. Among these nitrogenous metabolites in the blood indican happens to be the one towards the elimination of which the kidney rebels first.

It is possible, tho, as E. Becher explains by his experiments on the distribution of indican in the different parts of the body under normal and pathologic conditions, that the indican which had been retained within the blood, on account of renal insufficiency accumulates mostly in the blood, while only a little of it penetrates into the tissues, in contradistinction to residual nitrogen and especially urea. This may also account for the relatively big increase of blood indican compared with the increase of residual nitrogen and urea in the blood; it may also account for the fact that the retention of indican in the blood takes place much earlier than that of the residual nitrogen and urea in the blood. This explains the cases where we find increased blood indican but still normal residual nitrogen of the blood.

4. In the various lesions of the stomach and intestines we found blood indican values ranging 0.08-0.8 mg. per cent. We could not find any relation between these blood indican values and the urinary indican values. On the one hand we found increased blood indican in patients who exhibited only small urinary indican values, while on the other hand we observed very small blood indican values in spite of enormously increased urinary indican values. These observations do not conform with the claim of Georg Haas who reports as his highest blood indican value in stomach and intestinal diseases only 0.147. Inasmuch as Haas precipitates the serum albumin with alcohol, while I, just as Rosenberg, used trichloracetic acid, I had to multiply the values found by Haas by 1.6 —according to Vanbommel's claim—to conform my findings to those of Haas's, but even then, after such correction, I got higher blood indican values in cases of peritoneal tuberculosis, for instance. This fact corroborates rather the claim of Rosenberg who found blood indican values up to 0.32 mg. per cent in cases of intestinal diseases without any renal affections.

I do not have the impression that the increased blood indican values found in stomach and intestinal affections were due to the increased putrefaction within the intestinal tract, because there are cases of large tumors and frequently bleeding ulcers among the cases with very small blood indican values, while the same large tumors and bleeding ulcers were also among the cases with increased blood indican. Besides, as we have pointed out, there is no interrelation between blood indican and urinary indican.

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[*] Synopsis of the monograph, "Die Indicanaemie, ihre Bedeutung als Nierenfunctionsprobe." Urban & Schwarzenberg, Wien-Berlin, 1922.

[**] Permanent residence, Portland, Ore.

5. Two cases of pernicious anemia (verified by postmortem) showed blood indican 0.16 and 0.80 mg. per cent. The residual nitrogen of these cases also was above normal. As I have pointed out in my book on indicanuria (1912), the urinary indican in such cases is always increased; but that the blood indican in such cases is also increased, is a new fact which I wish herewith to state.

6. We do not find blood indican values above 0.24 mg. per cent in people with normal renal function (except in above mentioned stomach and intestinal diseases and pernicious anemia), in spite of excessively high values of their urinary indican.

7. Four cases of emphysema exhibited normal blood indican values.

8. Three cases of lead poisoning without nephritis exhibit normal blood indican values, thc the urinary indican was excessively high in two cases.

9. Two cases of diabetes showed normal blood indican values.

10. Of nine cases of liver diseases only two showed blood indican values above 0.16 mg. per cent. These findings are in contradiction to Rosenberg's claim that liver diseases frequently cause higher blood indican values.

11. Of two cases of acute nephritis one showed blood indican above 0.16 mg. per cent. The indican values of the blood proved to be a much more reliable test for the renal function than the determination of the residual nitrogen in the blood.

12. In seven cases of chronic nephritis we found the blood indican always increased, whenever the residual nitrogen in the blood was increased, but one can not say that the blood indican diminishes always, whenever the residual nitrogen in the blood diminishes, because one frequently observes the blood indican increased in spite of a decrease of the residual nitrogen. One even finds blood indican values already increased, while the residual nitrogen is still normal. On the other hand, we never found normal blood indican with an increased residual nitrogen in the blood. In other words, the blood indican level increases much quicker and earlier than the residual nitrogen level, especially when the case clinically turns worse. All these findings conform with the findings of Georg Haas. The dilution and concentration test proved in this group of cases of equal diagnostic value with the quantitative test for blood indican. They were, however, just like the blood indican test, diagnostically superior to the residual nitrogen determination in the blood.

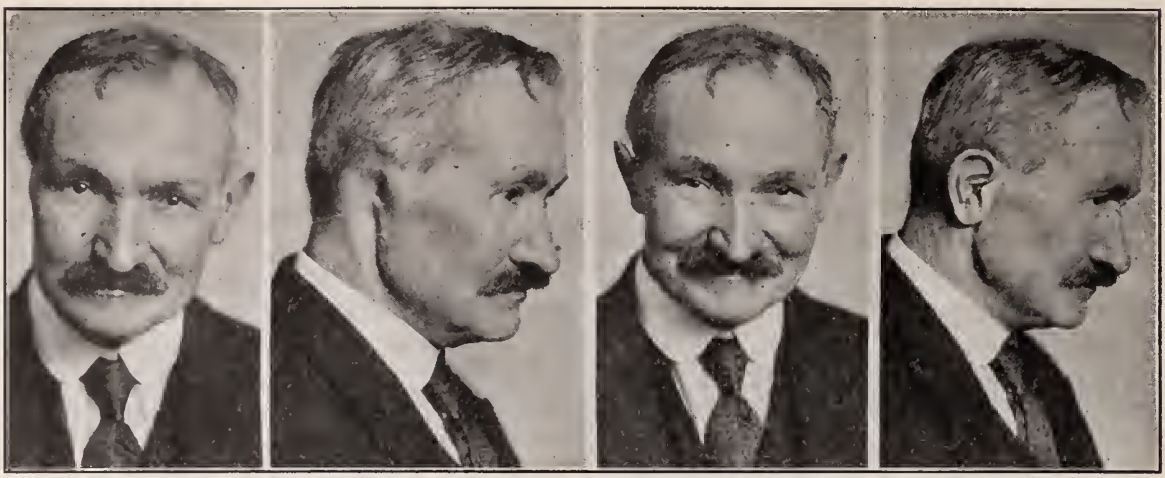
13. The seven cases of nephritis all showed a normal blood indican level. The residual nitrogen test in this group was also normal.

14. The cases with hypertension were subdivided into (1) those without albumin and without edema, 5 cases; (2) those without albumin and with edema, 2 cases; (3) those with albumin and without edema, 6 cases; (4) those with albumin and with edema, 1 case. With due consideration of the clinical symptoms and the water test findings one can determine whether this hypertension is (a) benign, (b) cerebral arteriosclerosis, (c) renal arteriosclerosis. The renal arteriosclerosis may be subdivided into a benign and malignant nephrosclerosis. The blood indican value always betrays the seriousness of the kidney lesion.

15. The relation of cardiac insufficiency and blood indican. The passive hyperemia of the kidney, produced by heart insufficiency, exhibits at the beginning normal residual nitrogen as well as indican values in the blood, no matter whether the case presents edema and ascites or not. In the course of cardiac insufficiency there takes place, first, an accumulation of residual nitrogen in the blood, while the indican level still remains normal; in the further course, after a long lasting or repeatedly returning passive hyperemia has brought about a stasis nephritis, the indican level of the blood also increases; later on, when thru therapeutic measures a profuse diuresis has taken place, the residual nitrogen in the blood may drop to normal, but the persistent, increased blood indican will denote the permanent kidney lesion.

16. Thru kindness of Prof. Eppinger I had the occasion to examine separately arterial and venous blood, gotten at the same time on the same patient. The residual nitrogen in the venous blood, in the four cases examined, always showed higher values than in the arterial blood, while the indican value was higher in the venous than in the arterial blood only in two cases. In the other two cases it showed no difference in value, perhaps due to the limitations of the colorimetric test.

17. Of the 98 cases observed above, 20 died.



PROTHESIS AFTER REMOVAL OF AURICLE FOR CARCINOMA *

Ralph A. Fenton, M. D., F. A. C. S.
AND
Irving M. Lupton, M. D.
PORTLAND, ORE.

The case, referred by Dr. F. M. Brooks, is presented to bring attention to two facts: (1) The dangers of stimulation to a slow growing skin cancer by the x-ray and radium, and (2) the possibility of local manufacture of a perfect prothesis to repair surgical loss of the auricle.

Mr. F. I. W., now 61, had an intractable ulceration of the upper part of the right concha for about two years. In the fall of 1921, altho there was little increase in the size of the lesion, he began x-ray and later radium treatment, which were so applied as to cause considerable reaction of the neighboring skin and a very rapid increase in the size and extent of the neoplasm. So dangerous did this appear that Dr. Brooks was called into the case and a radical removal of the auricle and of the outer end of the auditory meatus had to be done, almost a year ago.

Following removal of the auricle, which was found infiltrated with a rapidly growing prickle-celled epithelioma, there remained a foul eczematous condition of the skin of the auditory canal, which was bare of skin for about one centimeter, and tended constantly to close by granulation. This unhealthy condition was attacked in various ways, at first by radium, later by silver nitrate and mercurochrome solutions; and, finally, five months ago, skin grafting of the meatus was attempted. The first graft was unsuccessful because the field was still too foul; but a second Thiersch graft, two centimeters wide, wrapped about a little funnel of very thin celluloid, was kept in place for about ten days undisturbed. The discharge from further in was removed daily thru the center of the little funnel, by small cotton swabs. Subsequent dressings were made with borofax ointment, and the discharge was gone within three weeks, with retention of excellent hearing.

On account of the conspicuous character of this defect, a prothesis was suggested; and the co-operation of Dr. Charles Prehn, Jr., and his laboratory staff was secured. The extremely artificial look of hard rubber or papier mache protheses has been avoided by the use of a soft rubber concha mounted on a hard base. The latter fits smoothly against the head and contains one end of an overhead spring steel tape, which has a solid silver button at the opposite end, fitting a depression behind the other ear.

A plaster replica of the left auricle was first made, and from this the right auricle was modeled in wax. By the cire perdu method, embedding the waxen model in an artificial stone mold, which was then heated so as to melt out the wax, a mold has been secured which will permit of the manufacture of a duplicate if anything happens to the present prothesis. It is with considerable satisfaction that we are exhibiting this beautiful piece of prosthetic work, reflecting that thru the patience and skill of Dr. Prehn this patient has been spared the necessity for a trip to Chicago or New York to have this defect corrected.

610-616 Journal Bldg.

NEW ADVERTISEMENTS

Attention is called to the following new advertisements, appearing for the first time in this issue. Poison Oak Extract "Broemmel" (page 30) is a specific for poison oak dermatitis. Jefferson Medical College (page 12) announces its ninety-ninth annual session.

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* Read before Portland City and County Medical Society, Portland, Oer., April 25, 1923.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 323 Cobb Building, Seattle, Wash.
JUNE, 1923

EDITORIAL

THE PREVALENCE OF DIPHTHERIA

Altho the mortality from diphtheria was reduced from 60 to 10 per cent, following the introduction of antitoxin in 1895, there has been a startling increase in the number of cases reported in the past two years, there having been over 200,000 in the U. S. during 1921. According to Dr. Abraham Zingher, of the Research Laboratory of the Department of Health of New York City (writing in *Mother and Child*), the children of the well-to-do are much more susceptible to this disease than those of the poorer classes. It was discovered by the application of the Schick test that there were 60 to 75 per cent of susceptible children in schools of the better sections of New York City, compared with 15 to 25 per cent in the schools of the poorer section. This is explained by the fact that segregation and relative isolation of the well-to-do children rendered them more liable to infection than in the case of the poorer children.

It is believed that ultimately diphtheria can be eradicated by the universal application of the Schick test for susceptible children, and active immunization with diphtheria toxin-antitoxin. This result hinges upon the immunization of children from six months to six years of age. From 80 to 85 per cent of all the cases and deaths from diphtheria occur in children under the age of five years, making it the foremost fatal disease in children from one to three years of age. It seems questionable, however, whether this ideal result is likely to be obtained in the near future in face of the widespread opposition to all forms of vaccination from the numerous cults and anti-vaccination organizations.

GREAT MEDICAL MEETINGS THIS MONTH

The meeting of the Pacific Northwest Medical Association at Seattle, June 19-21, will be one of the most notable medical meetings ever held in the Pacific Northwest. Over twenty-five speakers, including heads of departments in many of the large medical colleges in the East and Middle West, will appear on the program. If you are not going to San Francisco you cannot afford to miss the Seattle meeting. If you are going to the A. M. A. meeting, start in time to attend the Seattle meeting, get acquainted with the men and join the special train to California, leaving Seattle June 22, 1923, 9:20 a. m. For information write Dr. Homer D. Dudley, 403 Cobb Building, Seattle. Details concerning this meeting and the program will be found on another page.

The meeting of the American Medical Association at San Francisco will be held the following week, June 25-29. Material concerning this meeting has been presented for several months in this journal and much data have been published in detail in many issues of the Journal of the A. M A. Hence, all of the profession of the Northwest should be familiar with the attractions of this great gathering. The meeting of this national association is held on the Pacific Coast so rarely that physicians of this region will miss a great privilege if they fail to take advantage of this opportunity to attend an A. M. A. meeting at their own doors, instead of being obliged to travel across the country for that purpose.

The profession of San Francisco has made elaborate plans for the comfort and entertainment of visitors. They extend a cordial invitation to physicians of the country to visit their city and state at this time. A vacation period to include the Seattle meeting, followed by that at San Francisco will comprise an ideal arrangement for this summer month.

UNIVERSITY EXTENSION COURSE

The past high standard of teachers conducting the Washington University extension course at Seattle is a guarantee of its excellence. This year will be no exception to the established rule of bettering the course each summer. The speakers are so well known that they need no introduction. The physicians of the Northwest are to be congratulated upon the opportunity of listening to a series of lectures given by such prominent men as Drs. Finney, Stengel, Ormsby and Rosenow. A course easily available for little time and expense, one that would cost hundreds of dollars and much valuable time to obtain otherwise.

These lectures give the Western doctors an opportunity to keep abreast of the times and learn the latest progress in medicine and surgery. The reunion dinners of the various alumni will add to the pleasure of the meeting. Reserve July 16 to 20 for the University Extension Course.

ANNUAL MEETING OF OREGON STATE MEDICAL SOCIETY

The annual meeting of Oregon State Medical Society will be held in Portland, July 10-11. While the program has not yet been entirely completed, a number of well known members of the profession will be present. The following men have been secured for this meeting:

Dr. William Sharpe, of New York, will present two papers on "Present Status of Neural Surgery" and "Diagnosis and Treatment of Brain Surgery."

Dr. O. P. Kimball, of the Cleveland Clinic, will read a paper on "Prevention and Treatment of Goiter."

Dr. George E. Pfahler, of Philadelphia, has a paper on "The Use of Radium."

Dr. George V. I. Brown, of Milwaukee, will have a paper on "Ancient and Modern Plastic Surgery."

Others who will appear on the program will be announced later.

At this meeting the amendment to the constitution will be discussed and decided, which will raise the annual dues for the society to twenty dollars per year. The entertainment for the meeting will consist of a trip on the Columbia Highway, with a dinner and dance at one of the club houses. An excursion rate of a fare and one-third has been arranged on all railroads, provided a sufficient number of visitors register at the meeting for this purpose. Remember you pay full fare to Portland and get a receipt at the time of purchasing the ticket. If the required number of receipts are presented to the secretary of this meeting, you will be entitled to a one-third return fare. This will be a valuable meeting and it is hoped that all members have planned to be in attendance, together with visitors from adjacent states. Altho other medical meetings are being held at dates in close proximity to this, it is hoped that a goodly number will plan to be present at this time.

THE IDAHO JUNE MEETING

The completed program for the Idaho State Medical Association meeting at Idaho Falls, June 13-14, has been received by the members of the association. It provides one of the best programs of papers which has been scheduled for Idaho meetings and will be well worth the while of each member to attend. The group of well known medical men from the East will provide material on so many different subjects that no member can afford to be absent from the meeting.

The entertainment feature is unusual this year. The outstanding feature is a trip to the Yellowstone Park. It is proposed to take all visitors as guests of the association. Any one who has familiarized himself with the wonderful attractions of the Yellowstone Park will be enthusiastic to pass on to his friends the personal inspection of this wonderland. Those who have not visited the park will miss an opportunity of a life time if they fail to visit it on this occasion. The trip will be so arranged that there will be ample time to reach Seattle to attend the meeting of the Pacific Northwest Medical Association.

THE UTAH COMPLETED PROGRAM

The final program for the meeting of the Utah State Medical Association to be held at Salt Lake City, June 20-22, contains papers by a large number of well known medical men from the east. The following will read papers at the three days' session: Drs. A. J. Ochsner, Chicago; J. E. Rush, New York; V. P. Blair, St. Louis; Carl Beck, Chicago; G. W. Wende, Buffalo; H. L. Kretschmer, Chicago; H. S. Plummer, Rochester, Minn.; W. A. Pusey, Chicago. The papers by these men will attract a large attendance from the Utah profession.

MEDICAL NOTES

Annual Conference of Health Officers. The annual conference of county and city health officials and public health nurses will be held in Portland, June 11-12, under the auspices of the Oregon State Board of Health. Papers will be read by Dr. H. W. Irwin, health officer of Coos County, and Dr. G. W. Parrish, of Portland. There will be discussions by Drs. P. E. Bower, of Los Angeles; Albert Keidel, Johns Hopkins University, and C. W. Garrison, Little Rock, Ark. There will be a moving picture, showing treatment for diphtheria and papers will be read on matters of health and general hygiene and tuberculosis.

Surgery on a Wholesale Schedule. Dr. R. V. Ellis, formerly of Salem, has been practicing for the past seven years at Ketchikan, Alaska. The natives of Prince of Wales Island are not favored with a medical attendant and, having a collection of many illnesses amenable to surgical relief, they pooled their interests and sent for the doctor to attend them en masse. Assembling an assistant and three nurses, he chartered a boat for the trip. It was reported that in a day and a half they operated on seventy-eight cases, including adenoids, tonsils, appendicitis, fractures and many other conditions of disability. It is stated that one little red haired native, observing attendants dressed in white operating robes, slipped out of the line and soon returned clad in a nightie and a pair of rubber boots, ready for any emergency that might arise. One man brought a family of fourteen children. He could not call the last one by name but said, "Wait, I'll ask his mother."

New Hospital Plan Proposed. Since the negotiations with the government for the purchase of the Hahnemann Hospital, in Portland, have resulted in failure to accomplish the sale, it is proposed to present a new plan to the government for the establishment of such an institution. The Portland Chamber of Commerce will urge the location of a tuberculosis hospital for the treatment of war veterans in this city. A committee was last month appointed to investigate sites and assemble detailed plans for this purpose.

Appointed Surgeon-in-Chief. Dr. Richard B. Dillehunt, of Portland, Dean of the University of Oregon Medical School, has been appointed surgeon-in-chief of the Portland unit of the Shriner's Hospital for Crippled Children. This hospital, which will soon be constructed, will represent the last word in building, equipment, nursing service and devices for treatment of crippled children.

Appointments to State Medical Offices. The Governor has recently made the three following appointments to the state board of health: Drs. W. B. Morse, of Salem; C. M. Barbee, of Portland, and W. T. Phy, Hot Lake. He has also appointed Dr. M. K. Hall, of Portland, as a member of the state board of medical examiners.

Delivered Many Babies. Dr. A. S. Bower, formerly of Marshfield, died last month, at Hanford, Calif. He reported that during his years of practice he officiated at the birth of 3000 babies.

New Hospital to be Established. It is reported that a hospital is to be established at South Brownsville, to be under the care of a nurse, Mrs. Harrison. There have been no adequate hospital facilities in that section.

Dr. D. A. Jessop, chief surgeon of the O.-W. R. R. & N. lines in Portland, has recovered from a long siege of encephalitis lethargica, so that he was able to go to California last month for recuperation.

Appointed Health Inspector. Dr. A. B. Peacock, of Marshfield, was recently appointed special policeman to serve as health inspector.

WASHINGTON

Inspection of Hospitals. Dr. E. W. Williamson, of Chicago, representing the American College of Surgeons, has recently made a tour of inspection of the hospitals in the Pacific Northwest. The purpose of the inspection is the standardization of hospital methods. The inspection of hospital equipment, laboratory facilities and general arrangements will determine the rating of each hospital in the annual report of the national organization.

New Hospital Proposed. Plans for a new hospital are under consideration at Port Angeles. Since the burning of the General Hospital the need of a modern institution has been acutely felt. The matter was last month under consideration at a meeting for that purpose at the Commercial Club.

New Feature of Hospital Day. A unique feature for celebrating national hospital day was presented to the Deaconess Hospital at Spokane. It instituted a "Childrens' Alumni," composed of the children born in the institution, who were invited to assemble for this occasion.

Nurses' Convention. The Northwest Convention of The American Nurses' Association, including graduate nurses from Washington, Idaho, Oregon and Montana, will be held in Tacoma, June 6-9. The chief speaker will be Dr. Richard A. Bolt, General Director of the American Child Hygiene Association, of Washington, D. C.

Home for Nurses Opened. The new home for nurses of the training school for the Sacred Heart Hospital of Spokane was formally opened May 12. The home has been under construction for some time and will be a great addition to the hospital facilities.

New Doctors' Building Proposed. The Metropolitan Building Company, of Seattle, has announced the construction of a new six story building for doctors and dentists, to occupy the entire block on Fourth Avenue opposite the new Olympic Hotel. It will cost $750,000. It will contain the newest ideas and the latest devices for the convenience of this specialized group of tenants. It is proposed to have a garage in the basement for the convenience of tenants and patients.

Annual Tuberculosis Meeting. The annual meeting of the Washington Tuberculosis Association will be held in Spokane, June 11-12. Delegates will be in attendance from tuberculosis organizations in various parts of the state.

Speakers of note will be present. Dr. H. A. Pattison, supervisor medical service for the National Association, will discuss "Standardization Sanatoria." Dr. R. S. Patterson, executive secretary of the Ohio Association, will speak on "Underlying Causes for Success or Failure in Seal Sales."

Doctor Held for Ransom. Among the Americans held for ransom by the Chinese bandits, is Maj. Robt. A. Allen, U. S. Army officer. He practiced in Tacoma about fifteen years ago. Later he moved to Carbonado as company physician at the coal mine. He enlisted in the army in 1917, being attached to the aviation department. For the past two years he has been stationed in the Philippine Islands, and with his wife and son was on a pleasure trip when captured by the bandits.

Home From Globe Trotting. Dr. Arthur E. Burns, of Seattle, returned home last month after a year's absence. More than half of this time was spent in study in Vienna. He returned by way of India, China and Japan. He had a diversity of experiences, including participation in a wild elephant hunt and observation of a successful pursuit of a tiger. He is full of the recital of many pleasing experiences.

Dr. Walter C. Woodward, of Seattle, last month experienced severe injuries in an encounter with a motor bus. Besides a fracture of the ramus of the pubis, he sustained extensive and deep lacerations of one of his legs.

Moved to England. Dr. J. B. Couche, who has practiced at Entiat for the past five years, has gone to England, where he intends to qualify as a practitioner in Liverpool, his family home.

Dr. W. R. McKinley, of Sumas, has moved to Burlington, where he will continue practice.

Dr. Clarence W. Shannon, of Seattle, who has been studying in Eastern cities for the past four years has returned and resumed practice.

Dr. A. B. Cook, of Anacortes, has returned home for practice after having spent the winter in California.

Medical Wedding. Dr. Willis H. Corson, of Seattle, coroner of King County, was married to Mrs. Anna Z. Wickland, of Seattle, at Everett, May 3.

IDAHO

New Hospital to be Built. A railroad hospital is to be constructed at Potlatch, under the auspices of the Western Hospital Association. Plans call for four wards with four beds each and twelve private rooms. It will occupy a building which will be remodeled for the purpose.

Medical Unit to be Established. Dr. Harold Hughart, of Pocatello, has been authorized by the Adjutant General of Idaho to organize a medical detachment in that city, of the 186th Infantry, Idaho National Guard.

Receiving Hospital Opened. The new receiving hospital of the state mental institution at Blackfoot was formally opened last month. The addition is to be utilized as a receiving hospital, where patients will be examined and retained for observation. If curable, the patient will not be confined in the main institution for the insane. The new building was constructed at a cost of over $100,000. Dr. C. A. Hoover was appointed as superintendent of the institution.

OBITUARIES

Dr. Alfred V. Marion died in Seattle, Wash., May 20, from chronic nephritis, after an acute illness of four weeks. He was born in Baltimore, Md., in 1866. He moved to Walla Walla, Wash., with his family in 1881. He attended Whitman College in 1886, after which he received an appointment to Anapolis. He was at this institution but a short time. Later he entered the Georgetown University Medical School at Washington, D. C., and received his medical degree from the University of Oregon Medical School in 1892. He began practice in Seattle in 1893. Later he practiced in Blewett, Leavenworth and Sultan. In 1898 he became surgeon for the Great Northern railway during the construction of the Cascade tunnel. He located at Everett in 1902 and moved to Hatton in 1904. He remained here until 1921, when he moved to Honolulu. During the past year he has been surgeon for one of the oriental vessels of the Pacific S. S. Company. For a period of ten years previous to 1920 he was famous among several surgical clinics in consequence of the extraordinary number of abdominal operations to which he was subjected, owing to gastric ulcer, resulting in complete recovery from this condition during the past three years.

Dr. William J. Miles died at LaConner, Wash., April 29. He settled in Seattle for practice in 1892. During the gold rush he went to Alaska and opened the first drug store in Nome. He returned to Seattle for practice in 1900. About five years ago he was government surgeon at the Pribiloff Islands, Alaska.

Dr. W. E. Lewis died at Bothell, Wash., May 1, at the age of 73 years. He practiced medicine for nearly fifty years. From 1892 to 1896 he was mayor of Colfax. He settled in Bothell in 1920.

Dr. Charles Cope died at Tacoma, Wash., April 24, at the age of 72 years. He had lived in Tacoma for four years. He was a native of Ohio.

REPORTS OF SOCIETY MEETINGS

OREGON

CENTRAL WILLAMETTE MEDICAL ASSOCIATION

Pres., W. H. Davis; Sec'y, F. E. Beauchamp

A meeting of this medical society was held at Corvallis, May 3. There was a good attendance, the membership being composed of men from Benton, Lane, Linn and Lincoln Counties.

Papers were read by Drs. W. B. Holden and Otis Akin, of Portland. Discussions were lead by Dr. W. B. Neal and E. L. Zimmerman, of Eugene.

SOUTHERN OREGON MEDICAL ASSOCIATION

Pres., C. B. Wade; Sec'y, W. P. Holt

A meeting of this medical society was held at Ashland, May 8, 1923.

The president's address was delivered by Dr.

Theodore Malgrim, of Phoenix. The following papers were read.

Advancement Made in Roentgenologic Study of the Gallbladder. Dr. Dorwin Palmer, Portland.

Hemolytic Infections of the Gallbladder, A Probable Cause of Pernicious Anemia, Dr. N. W. Jones, Portland. Discussion by Drs. J. C. Hays, of Medford and N. F. Sether, Roseburg.

The Patient's Mind. Shall We Consider it in Treating Him? Dr. William House, Portland. Discussion by Drs. E. B. Pickle, Medford and W. H. Flannagan, Grants Pass.

Diphtheria, Dr. A. J. Warren of the Rockefeller Foundation. Discussion by Drs. C. B. Wade, Roseburg, and G. W. Gregg, Ashland.

Chronic Prostatitis. A Common Cause of Backache. Dr. C. G. Moses, Grants Pass. Discussion Drs. G. O. Jarvis, Ashland and R. J. Clancy, Medford.

The following officers were elected for the ensuing year: Pres., Dr. C. B. Wade, Roseberg; Vice-Pres., Dr. R. B. Shoemaker, Roseberg; Censors, Drs. C. B. Marks, Grants Pass, 1923; R. J. Conroy, Medford, 1924. Delegates to the state society, Dr. Woods, Medford, for 1923, and Dr. Shoemaker, Roseberg, for 1924. It was voted to hold the 1924 meeting at Roseberg.

IDAHO

IDAHO FALLS MEDICAL SOCIETY

Pres., A. R. Soderquist; Sec'y, J. W. West

A monthly meeting of this society was held at Idaho Falls, May 15. The following officers were elected for the ensuing year: Pres., A. R. Soderquist, Idaho Falls; Vice-Pres., E. A. Cantonwine, Idaho Falls; Sec'y-Treas., J. W. West, Idaho Falls. This society will entertain the State Association at its annual meeting, June 13-14. It is hoped to make this the best meeting in the history of the organization. A trip is planned for Yellowstone Park, after which a large number will attend the meeting of the Pacific Northwest Medical Association in Seattle.

SOUTH SIDE MEDICAL SOCIETY

Pres., J. H. Cromwell; Sec'y, J. N. Davis

This society held its meeting at Gooding, May 15. About fifty members were in attendance from the nine counties included in the society.

Papers were read by Dr. R. P. Hampton of Salt Lake City and Ezra C. Rich, of Ogden. The meeting was concluded with a banquet.

CANYON COUNTY MEDICAL SOCIETY

Pres., R. G. Young; Sec'y, H. P. Ross

This society held a meeting at Nampa, May 9. The following officers were elected for the ensuing year: Pres., R. G. Young, Caldwell; Vice-Pres., H. G. Robinson, Nampa; Sec'y-Treas., H. P. Ross, Nampa. Delegates to the state medical association meeting, Dr. F. M. Cole, Caldwell; alternate, Dr. Leo Chilton, Nampa.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., C. E. Hagyard; Sec., R. F. Hain

The general meeting of King Couny Medical Society was called to order by the president Dr. C. E. Hagyard at 8:15 p. m., May 7, 1923, in the Public Safety Building, Seattle, sixty members being present. Minutes of the previous meeting were read and approved.

Applications of Drs. H. L. Botts, W. W. Bell, R. L. Jeffery and W. T. Christensen were read.

Dr. A. U. Simpson, epidemiologist, State Board of Health, read a paper on "Raw Milk Epidemics."

Mr. Hardy addressed the society in behalf of The Tax Limit League, concerning the purchase of the Skinner & Eddy tract.

Miss Ruth Carroll, dairy bacteriologist and chemist, talked on "Chemical Analysis of Milk and Effects of Pasteurization."

Dr. F. E. Smith, chief of Dairy and Food Inspection, Seattle Health Department, read a paper on "A Safe Milk Supply."

After a discussion of milk as a food the question of pasteurization was discussed and the problem of obtaining better milk for the city of Seattle was considered. Dr. Read advised there is a proposed change in the present city ordinance which would greatly improve the milk supply. It appeared that the change would probably be looked upon more favorably by the city council if King County Medical Society endorsed it. A motion was made and seconded that the members present go on record as endorsing an ordinance requiring the pasteurization of all milk. Dr. John Hunt amended the motion that it be referred to the Committee on Legislation for investigation and report. The motion was passed, the amendment lost.

Dr. J. M. Blackford spoke in reference to Hospital Day. Dr. John Lundy proposed an exchange page for the bulletin. Dr. G. T. Dowling inquired about the proposed classification for the telephone directory.

PIERCE COUNTY MEDICAL SOCIETY

Pres., J. P. Kane; Sec'y, W. B. Penney

The regular meeting of the Pierce County Medical Society was held in Tacoma, Wash., May 8, 1923.

"Side Lights on Medical History—Louis Pasteur," Dr. Charles James.

The paper of the evening was by Dr. Lester Palslides, illustrating case records showing diet, blood mer, of Seattle, on Insulin. He showed many sugar and urinary findings before and after using insulin. The paper was discussed by Drs. Miles and Wagner.

Dr. Sheldon, of New York, gave a talk on "The Philosophy of Service."

A communication was read from Dr. Sherman, of Detroit, in regard to a libel suit instituted against

Hearst and the International Magazine for their articles by DeKeif. After some discussion the society went on record as disapproving of such publicity as given in these articles.

The president, Dr. Kane, spoke of the possibility of getting medical rooms in the new hotel. Motion was made and seconded that the trustees be appointed a committee to investigate what might be done and report back to the society.

Attention was called to the banquet to be held on May 22nd in honor of the wives of the doctors.

The secretary reported that the trustees had considered the request of the Tacoma Information Directory Company for the names of the members of the Pierce County Medical Society to be carried in the forthcoming directory to be attached to lamp posts. The trustees recommended that no action be taken.

It was reported that the Snohomish County Medical Society had asked us to instruct our delegates to the state meeting this year to vote for Everett as the meeting place next year. This was recommended by the society.

The president announced that this would be the last regular meeting held until September.

PACIFIC NORTHWEST MEDICAL ASSOCIATION

SECOND ANNUAL MEETING

Seattle, Wash., June 19-21, 1923

The program will be carried on in general sessions during the morning hours from 9:00 to 12:30 in Plymouth Congregational Church. During these, Drs. Carlson and Wells and Professor Wenckebach will present their discourses. In the afternoon and evening there will be two sessions going constantly, one essentially medical and one essentially surgical, altho there will be some slight deviations from this. On Monday afternoon, June 18, from 1:45 to 5:30, a pediatric section will meet in Women's University Club, while during the same hours there will be a general session in Plymouth Church which will be largely borderland material. On the other afternoons and evenings the medical subjects will be presented in Women's University Club, while surgical subjects will be delivered in Plymouth Church. A radiologic section will be arranged for, to meet in the Sunday School room of Plymouth Church.

On Monday evening, June 18, Dr. Gideon Wells will present a lecture for physicians and the public on "Roumania and Its People; Their Part in the World War, and the Work of the American Red Cross With Them," in First Presbyterian Church; that is to say, the evening before the general sessions open. On Tuesday evening, while the medical and surgical sections are going on in Plymouth Church and Women's University Club, a series of lectures will be given in First Presbyterian Church by Drs. Collip, Byfield, Frothingham and Peabody. These are designed in particular for laymen.

Headquarters will be in the Stuart Building Annex, where a postoffice will be maintained, where there will be a daily publication, the Northwest Medical Bulletin, distributed from the registration desk, which will also be prepared to supply everything in the way of information and for the comfort and convenience of all while in Seattle. The same room will contain a large number of commercial exhibits.

Arrangements have been completed whereby a special train will leave Seattle early Friday morning, to carry delegates to the meeting of the American Medical Association in San Francisco. For those who are interested in medical education a special side-trip on the way to San Francisco will be arranged, permitting the special train to stop at Portland early in the morning for breakfast. Then an automobile tour will be made to the medical school to inspect the new building and hospital. After this arrangements will be made for an automobile trip around the city and possibly along the famous Columbia Highway, where luncheon will be served and a return trip in time for the train to San Francisco some time in the afternoon, at an hour not yet definitely arranged for.

PROGRAM

Tuesday, June 19, 1923

PLYMOUTH CONGREGATIONAL CHURCH

9-10 A. M.—Dr. A. J. Carlson
Recent Advances in the Physiology of the Alimentary Tract.

10-11—Dr. Gideon Wells
Practical Significance and Treatment of Irregular Heart Rythms

11-12—Prof. K. F. Wenckebach
Cancer

12-1:30—Luncheon

AUDITORIUM OF WOMEN'S UNIVERSITY CLUB

1:30-2:15 P. M.—Dr. H. Helmholtz
Pyelitis in Children

2:15-3—Dr. Julius H. Hess
Acidosis in Infancy and Childhood

3-3:45—Dr. Albert H. Byfield
Nutritional Viewpoints in the Feeding of Infants and Children

3:45-430—Dr. H. F. Helmholz
Asthmatic Bronchitis in Children

4:30-5—Dr. Julius H. Hess
The Care of Premature Infants

AUDITORIUM OF WOMEN'S UNIVERSITY CLUB

8-9 P. M.—Dr. Peter Bassoe
Skeletal Lesions Causing Spinal Cord Symptoms —Neurologic and Pathologic Phase

9-10—Dr. A. Sachs
Malignant Diseases of the Colon

PLYMOUTH CONGREGATIONAL CHURCH

1:30-2:30 P. M.—Dr. Oliver S. Ormsby
Syphilis, Cutaneous Lesions, Diagnosis and Treatment.

2:30-3:30—Dr. Channing Frothingham
The Disturbances Due to Syphilis in Other Organs Than the Skin.

3:30-4:00—Dr. W. W. Duke
Studies in Serology in its Relationship to the Diagnosis and Treatment of Syphilis—A Resume of hitherto Unpublished Data.

4:00-5:00—Dr. Warfield T. Longcope
Practical Value of Functional Tests for Kidney Efficiency in the Diagnosis, Prognosis and Treatment of Nephritis

5:00-5:30—Dr. Russell D. Carman
The Roentgenological Signs of Gastric Ulcer

5:30-8:00—Dinner

PLYMOUTH CONGREGATIONAL CHURCH

8:00-9:00 P. M.—Dr. Goerge E. Shambaugh
The Structure and Function of the Acoustic Labyrinth

9:00-9:54—Dr. Evarts A. Graham
Consideration of the Pathogenesis of Cholecystitis and its Complications.

PUBLIC MEETING

FIRST PRESBYTERIAN CHURCH

8:00 P. M.—Dr. H. Gideon Wells
Roumania and its People; Their Part in the World War, and the Work of the American Red Cross With Them.

WEDNESDAY, JUNE, 20

PLYMOUTH CONGREGATIONAL CHURCH

9:00 10:00 A. M.—Dr. A. J. Carlson
Studies on the Visceral Sensory Nervous System

10:00-11:00—Dr. H. Gideon Wells
Cancer

11:00 12:00—Prof. K. F. Wenckebach
Adherent Pericardium and the Possibilities of its Relief

12:00-1:30—Luncheon

AUDITORIUM OF WOMEN'S UNIVERSITY CLUB

1:30-2:30 P. M.—Dr. Francis W. Peabody
The Clinical Significance of the Vital Capacity of the Lungs

2:30 3:30—Dr. Warfield T. Longcope
Some Phases of Protein Sensitization

3:30-4:30—Dr. Ernest E. Irons
Chronic Infection as a Cause of Invalidism

4:30-5:30—Dr. Albert H. Byfield
Systemic Manifestations of Focal Infections in Childhood

AUDITORIUM OF WOMEN'S UNIVERSITY CLUB

8:00-9:00 P. M.—Dr. J. B. Collip and Dr. H. C. Jamieson
Laboratory and Clinical Experiments on Insulin

9:00-10:00—Dr. R. T. Woodyatt
The Role of Insulin in the Management of Diabetes

PLYMOUTH CONGREGATIONAL CHURCH

1:30-2:15 P. M.—Dr. Carl A. Hedblom
Chronic Empyema and its Management

2:15 3:00—Dr Evarts A. Graham
Some Phases of Thoracic Surgery

3:00-4:15—Dr. Carl A. Hedblom
The Treatment of Chronic Non-Tuberculous Suppuration

3:45-4:15—Dr Evarts A. Graham and Dr. Duff S. Allen
Intracardiac Surgery

4:15-5:00—Dr. Gordon B. New
Actinomycosis of the Head and Neck—A Report of 106 Cases

5:30—8:00—Dinner

PLYMOUTH CONGREGATIONAL CHURCH

8:00-9:00 P. M.—Dr. George E. Shambaugh
The Structure and Function of the End Organs of the Semicircular Canals and the Vestibule

9:00-10:00—Dr. Dean Lewis
Treatment of Fractures and Their Complications—Illustrated with Lantern Slides

PUBLIC MEETING

FIRST PRESBYTERIAN CHURCH

8:00 P. M.—Dr. J. B. Collip
Problems in Diabetes

Dr. A. H. Byfield
Why our Children Should be Properly Nourished

Dr. Channing Frothingham
Heart Diseases from the Standpoint of the Patient

Dr. Francis W. Peabody
The Public and the General Practitioner

These four lectures will be given in succession, each to be limited to twenty or twenty-five minutes.

THURSDAY, JUNE 21

PLYMOUTH CONGREGATIONAL CHURCH

9:00-10:00 A. M.—Dr. A. J. Carlson
The Present Status of Organotherapy

10:00-11:00—Dr. H. Gideon Wells
Cancer

11:00-12:00—Dr. Joel E. Goldthwaite
The Chronic Patient; His Challenge to our Profession, and the Newer Methods of Investigation as a Basis for Treatment

12:00-12:30—Business Session
Business transacted by the Election of Officers; New Business.

AUDITORIUM OF WOMEN'S UNIVERSITY CLUB

1:30-2:30 P. M.—Dr. Oliver S. Ormsby
Diagnosis of Some Parasitic Diseases of the Skin

2:30-3:30—Dr. Francis W. Peabody
Cardiac Neuroses and Their Treatment

3:30 4:30—Dr. Channing Frothingham
Influenza and Influenzal Pneumonia

4:30-5:30—Dr. R. T. Woodyatt
Clinic on Diabetes

PLYMOUTH CONGREGATIONAL CHURCH

1:30-2:30 P. M.—Dr. Dean Lewis
Lesions of the Breast, Their Diagnosis and Treatment

2:30-3:30—Dr. George E. Shambaugh
Clinical Problems in the Handling of Cases of Chronic Suppirative Otitis Media

3:30-4:30—Dr. Gordon B. New
The Treatment of Congenital and Acquired Deformities of the Face and Neck

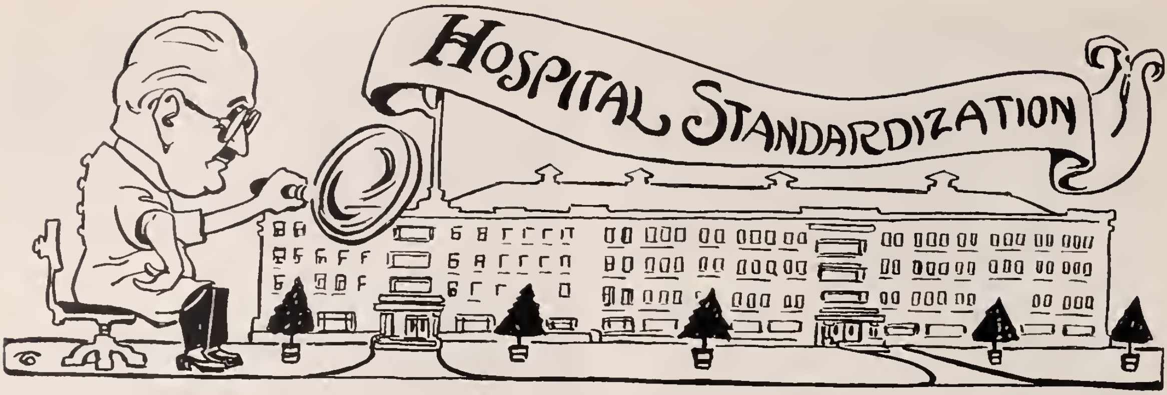
4:30 5:15—Dr. L. K. Poyntz
Is Roentgen Therapy Rational?

7:00 P. M.—Banquet

8:00—Announcement of election of officers. Installation of officers. Presidential address, Dr. J. Earl Else.

8:30 9:30—Dr. Walter Timme
The Relation of Neuropsychiatric States to Early Status Thymico-Lymphaticus

9:30-10:30—Dr. K. F. Wenckebach
Informal Discussion of the Medical Economic Conditions in Vienna



Edited by George W. Swift, M. D.

THE SMALL HOSPITAL

Requests for information on how to standardize are coming in from small hospitals. How should they go about it to organize a staff? Is it necessary to have a pathologist; to have a dietitian?

In order to standardize any hospital the minimum requirements must be met. These are, (1) the organization of a staff, (2) the organization of the laboratory, (3) the establishment of a case record system, (4) the holding of clinical meetings.

In a small community every doctor should be on the staff. They should hold their clinical meetings once a month at least, at which time the case records are reviewed. If these two things are carried out, standardization will naturally follow without any special effort. From the hospital standpoint the organization of the laboratory and the installation of case records mean the expenditure of some considerable monies. A small laboratory can be equipped for from $250 to $500, which will take care of all the necessary routine laboratory work. An x-ray machine can be supplied for another $500, the small units, which will take care of the necessary x-ray work. Both of these could be managed by a technician under the direction of one of the local doctors.

After this has been done a request should be sent to the State Committee on Hospital Standardization, asking for inspection. The state committee will then send an outside inspector to check up on the hospital and, if everything is satisfactory, put it on the accredited list.

Catholic hospitals are supplied with case record forms by the Catholic Hospital Association, and Methodist hospitals by the Methodist Hospital Association. Every large city has some one printer who will supply case records of standard form. The American College of Surgeons also supplies record forms at a very moderate price. It is not necessary to put in all the case records at first but the following should be included: History and Physical Examination Chart, Doctors Orders and Progress Chart, Maternity Chart, Summary Card and Admission Card, Temperature Chart and Nurses Record.

That the problem is a vital one can be easily understood when one glances at the accompanying table, showing the proportion of hospital beds in one state. Forty per cent of all beds are in hospitals of less than fifty beds. This means that in our present system of caring for the sick we must consider the small hospital problem as of vital importance.

HOSPITAL BEDS IN WASHINGTON

County	No. Beds Non-Standardized	No. Beds. Standardized
Clallam	11	....
Jefferson	30	....
Grays Harbor	20	....
Clarke	185	....
Lewis	65	....
Mason		50
Pierce	50	495
King	143	1889
Skagit	65	....
Snohomish	160	....
Whatcom	70	100
Kittitas	75	....
Yakima	21	150
Chelan	100	....
Okanogan	21	....
Stevens	10	....
Spokane	123	700
Whitman	75	....
Lincoln	10	....
Franklin	50	....
Walla Walla	50	....
Benton	6	....
Total	1340	3384

LAY ASSISTANTS

What is going to be the attitude of the profession in regard to lay assistants? In larger hospitals having internes, nurses are now giving the anesthetics, doing routine, laboratory work, and taking most of the x-ray exposures, even giving therapy in some hospitals. Can we deny to the small hospital what we approve of in the larger institutions? Of course the answer is what is fair and acceptable in one is also fair in the other. Lay assistants are here, they are accepted because of both thoroness and cheapness on the one hand, and because of necessity and economy on the other.

In a large hospital doing a large laboratory work full time, a highly trained physician should direct the work. He should be paid well and train internes and nurses. His spare time should be devoted to research work for the hospital, for compilation of reports on the results of laboratory findings, surgical findings as corroborated by the laboratory, and the development of the hospital technic in general. This is the ultimate goal toward which all hospitals should strive.

The second and most popular method is one which conforms to standardization, yet benefits really no one to any great extent. It furnishes a job for a few doctors and laymen, but is a purely commercial arrangement. It is the "farming out" of the laboratories. It is the cheapest way out for the hospital; the staff oftentimes secures the services of the best in pathologic diagnosis and radiography, but it gives absolutely nothing toward developing either the hospital or the records as an asset for future study. The routine work is here again done by lay assistants.

Small hospitals cannot have the first because of too little work. The second method also is prohibited for a like reason. The problem is one of economy. How can the small hospital handle the laboratory problem? Simply by establishing the laboratory and hiring a man or woman trained in laboratory work at a small salary for full time work. Usually every small city has one physician well grounded in pathologic work and he is called upon to direct the laboratories. It is well to look ahead tho, and see what is in store for the future in the way of lay assistants.

Ten years ago a busy surgeon required an assistant physician for his anesthetics, another for his laboratory work, another his x-ray exposures, another to assist at operations and dressings—at least four physicians who gave part time to this man. Today the same surgeon has a nurse as anesthetist, a nurse as assistant, a nurse to do laboratory work, both pathologic and to run his own x-ray machine. He uses the interne as assistant and to do his dressings and write histories. In the absence of an interne the office nurse types the history and records it in the hospital. It is one step only when a lay assistant (a college graduated nurse) will become the clinical assistant to the busy physician.

Let us examine more closely the above contrast. The anesthetist who demanded higher fees, more costly paraphernalia and surrounded his duties with an air of importance, caused the surgeon to train his nurse to drop ether in the good old way and tend to business. The roentgenologist soon became too busy to do his own exposures and developing, and trained laymen had to do this for him. The result? These trained assistants now work for the surgeons and internists direct. The pathologist no longer wastes his time on urinalysis and collodion sections; this is the work of laymen while he busies himself with reports. The Wassermanns in practically all laboratories are "done" by laymen.

And these same technicians go into offices, groups and small hospitals to do the same high class of work. Who are now becoming the experts in case records? The nurses in charge of the records. Some day some wise surgeon or internist will employ one of these record keepers to be his "clinical assistant." She will go to the laboratories for reports, to the consultant and have him sign his slip, gather all the data, index and cross his records, both office and hospital. The result? A paper of merit written maybe by this same "case record keeper," but valuable, actually valuable. And why not? This" system," ever changing, yet always progressing will benefit the small hospital.

THE MODERN SMALL HOSPITAL

Large hospitals excel chiefly by contrast with smaller institutions. In the preceding paragraphs we have attempted to outline briefly the changes taking place in the larger cities. Now transfer these lay workers to the smaller hospitals, especially those in smaller cities. Add to the medical staff (1) a graduate nurse, college-trained in pathology at the University prior to her nurse's training; (2) a graduate nurse trained in keeping records, one who knows the standard requirements for all forms, both forward and backward; (3) a trained technician who has seen thousands of x-ray plates, heard them interpreted and seen the results of operation again and again; (4) a dietitian trained to diet all kinds of cases; (5) a trained nurse for reconstruction work and physiotherapy.

These five highly trained lay assistants at the command of the staff in small community hospitals of fifty beds will revolutionize the practice of medicine in such communities. The men at present sending their difficult cases away will handle them at home. The hospital idea will grow among the public. The physicians will develop a spirit of cooperation rather than one of dependence on larger centers. The expense must be born partly by the state. The State Board of Health should have in training graduates of the University to do the laboratory work in the various counties about the state.

If the state is to control venereal diseases, why not establish Wassermann laboratories in each county and get a duplicate report? If the state wants to know about tuberculosis and cancer, why not have laboratories where the tuberculosis and cancer are and not where they are not? If the state wants to analyze water, milk and food, why not at the source and not a hundred miles away? It would cost about $150.00 each for this type of work and the state would get far better results than at present. The hospitals can afford to supply the other members of the group.

Under the above plan modern medicine can be taken to every county. No surgery should be permitted in any non-standard hospital, office, clinic or sanatorium. The medical profession faces this problem. What will our answer be?

BOOK REVIEWS

Edited by Kenelm Winslow, M. D.

Non-Surgical Drainage of the Gall Tract. A Treatise Concerned with the Diagnosis and Treatment of Certain Diseases of the Biliary and Allied Systems, in Their Relation to Gastroenterology and General Clinical Medicine. By B. B. Vincent Lyon, A.B., M.D., Chief of Gastrointestinal Clinic, Jefferson Hospital, etc. Illustrated. Cloth. 640 pp. $10. Lea and Febiger. Philadelphia and New York. 1923.

This is a most thoro, painstaking and elaborate study of the whole subject of liver, gallbladder and gastrointestinal disease from a new viewpoint. Indeed a large book is devoted to this much debated subject. The crux of the Lyon-Melzer method of diagnosis is well known. After the introduction of magnesium sulphate solution into the duodenum, there appear bile A, B, and C; the B bile being of a darker, more viscid character is that presumably flowing from the gallbladder. This fact has been denied repeatedly and Dunn, especially, has found the same changes in bile in patients after removal of their gallbladders. Such findings would seem to absolutely refute the claims of Lyon. The author, however, in one whole chapter discusses and replies to the various criticisms of diagnosis and treatment. He finds that after removal of the gallbladder the supposed functions of that viscus (concentration of bile) are assumed by the liver itself. In this way he answers the above criticism. Dunn secured the supposedly characteristic B bile in cases in which it was proved by operation that the cystic duct was occluded. Lyon replies to this and many other objections by saying that the technic of his opponents was faulty.

It may be said in reference to the whole matter that a great advance has been made in the direct study of bile. And, again, that it is generally admitted that increased drainage or flow of bile from the gallducts follows the use of magnesium sulphate. Dunn thinks this occurs when the salt is swallowed, as much as when given by duodenal tube. The Lyon idea has not been generally accepted and practised by our large clinics but is indorsed by many authorities. McCrae, in an introduction to this book, states regarding the Lyon method that, "In diagnosis and treatment its value has been proved."

Apart from diagnosis the Lyon method appears to be useful in treatment of cases of various gallbladder conditions, even in very acute cholecystitis and cholangitis not suitable for operative procedures; also in postoperative infections of the gallducts. One gets a better idea of the scope of the method and its indications by consulting the detailed reports of the 45 cases included in the back of the book. When one considers the favorable opinion which has gradually developed in respect to the Sippey treatment of gastric ulcer, even in many cases of pyloric obstruction, one hesitates at expressing any positive opinion as to the ultimate status of the Lyon method. Only time will tell. No more authoritative or comprehensive description exists than in the present treatise by the originator of this novel method of diagnosis and treatment of biliary infections.

Winslow.

Clinical Laboratory Methods. By Russel Landram Hadell, M.A., M.D., Associate Professor of Medicine, University of Kansas, School of Medicine, etc. With 169 Illustrations and 5 Color Plates. 294 pp. $3.75. C. V. Mosby Co., St. Louis. 1923.

This book impresses one as being the practical work of a practical worker. It is presented to physicians and laboratory workers as a series of procedures which have been thoroly tried out and found to give accurate results. In the selection of the methods the first requirement has been the correctness of the underlying principle, and next the adaptability of the procedure to routine use. Only one method is given for each quantitative determination, and only one for qualitative test where a single one is adequate. An attempt has been made to present each procedure in simple manner. Wherever possible tables have been inserted to aid in the understanding of the technic and to assist in the calculations. To both physicians and laboratory technicians it can be highly recommended.

West.

The Form and Function of the Central Nervous System. By Frederick Tilney, M. D., Ph. D., Professor of Neurology, Columbia University. Second edition. 591 illustrations. 1019 pp. $12. Paul B. Hoeber, New York.

This book is intended by the authors to serve as an introduction to the study of nervous diseases or, as they express it, "to fill the gap between morphology and the practical requirements of clinical medicine," a purpose in which they have admirably succeeded. The anatomy and functions of the nervous system are so well explained as to make clear many obscure clinical manifestations. Several chapters are devoted to embryologic development, together with the nerve cells and neurone theory, preparatory to taking up the anatomy and functions. The spinal cord is discussed in detail, from the significance of spinal relations to the removal of the cord, giving the steps used in the removal, the structures of importance encountered, and finally the cord itself with the functions of the gray and

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white matter. Similarly with the brain, its anatomy is taken up a whole and then the structure and parts and their functions.

The entire work is well illustrated. There are special tables and diagrams to aid in localization, while a glossary and a chapter on reference reading is useful. This is the most complete and by far the best book of its kind the reviewer has read. It should be not only a boon to neurologists and neurologic surgeons, but of invaluable service to the internist and general practioner. It is a working tool.

WILT.

Venereal Disease in the American Expeditionary Forces. By George Walker, M. D., Late Col. Medical Corps, U. S. A. 237 pp. Medical Standard Book Co., Baltimore.

This volume reads more like a novel than a survey of venereal diseases. To line officers, army medical officers, public health officers and those who treat venereal disease in civil life it has a great appeal. The short chapters on passes, debarking troops in France, military police, houses of prostitution, venereal disease among returning troops, facts gathered from a study of 3,069 cases, conditions in Paris, Tours, Bordeaux, leaves and leave areas, and a host of social facts hitherto not found in any publication provide enough material for a Dumas or O'Henry. To all former officers it will bring back the memory of many incidents in their command. Many mistakes were made in the handling of this great problems, as putting urologists in charge when trained men were sidetracked or lost on index cards at headquarters. Venereal "farms," as the one at St. Aignan, were often miserably equipped and lacked competent urologists and hospital corps men. On the whole, however, good work was accomplished with prophylaxis and rigid venereal inspection.

We are indebted to the author for this interesting collection of facts which should prove of great value in our next war. The whole subject of venereal infection is a vital one to all communities, and the Army and Navy have shed much light upon it. This book should be read by all doctors and once started will hardly be laid aside until read thru.

PEACOCK.

Rules for Recovery from Tuberculosis. A Layman's Handbook of Treatment. By Lawrason Brown, M. D. Fourth Edition. 217 pp. $1.50. Lea & Febiger. Philadelphia and New York. 1923.

This book is intended for reading by the layman and contains much instructive information regarding the treatment of tuberculosis. Among the chapters is one on control of the cough, which is to be accomplished without drugs. "A man who coughs hard all day takes as much exercise as one who climbs a mountain." The cough is largely due to nervousness and can be largely controlled. "Coughing is scratching the throat and it is as impolite to scratch the throat as to scratch the back in public." He states that tuberculosis is spread from cattle to man in 8 per cent of cases and from man to man in 92 per cent. The sputum is the source of infection in almost all of the 92 per cent. He is emphatic against the use of alcohol in tuberculosis. "It is unnecessary as a stimulant and rarely as a drug."

SMITH.

The Medical Clinics of North America. (Issued Serially, one number every other month). Volume VI, Number 5, March, 1923. By Ann Arbor Internists. Octavo of 273 pages and 22 illustrations. Per clinic year (July, 1922 to May, 1923). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London. W. B. Saunders Company.

The clinical reports in this volume include discussions of diseases of many organs, all of which are presented by men connected with the University Hospital at Ann Arbor. Herrmann considers cases of endocarditis, purpura hemorrhagica, pulmonary infarctions and thromboses, congenital defect of the interventricular septum. Among other subjects presented are chorea, splenomegaly with acholuric jaundice, pyloric obstruction, peptic ulcer. This is one of the usual valuable numbers of The Medical Clinics, whose perusal will benefit all practitioners.

The Surgical Clinics of North America (Issued serially one number every other month). Volume III Number 1 (Philadelphia Number, February, 1923) 300 pages with 105 illustrations. Per clinic year. (February 1923 to December 1923). Paper $12.00 net; cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

This volume contains many clinical reports of value. Deaver deals with several phases of cholecystitis and appendicitis. No one yet seems to have said the last word concerning these diseases. Ashhurst presents a number of cases illustrating different aspects of surgery of the stomach. Thomas describes the primary closure of compound, double fracture of the leg. This is a method of treatment which he has described at length elsewhere. Billings presents several cases of osteomyelitis with an instructive description of treatment. Many other conditions are considered, the description of which contains much information for every surgeon. This volume is well worth careful reading by every member of the profession.

Transactions of the American Proctologic Society. Twenty-third Annual Session. St. Louis. May, 1922. 124 pp. $3.00. Paul B. Hoeber. New York. 1923.

This volume contains papers presented by this organization as its last annual meeting. They cover a variety of subjects, dealing with the diseases of the rectum, anus and colon. There is instructive information in a group of papers on cancer of the rectum and sigmoid. The book will be particularly valuable to specialists along this line.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah.

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ORIGINAL CONTRIBUTIONS

REMARKS CONCERNING ANGINA PECTORIS *

Harlow Brooks, M. D.
NEW YORK, N. Y.

During the past four years material and inclination have so combined that I have been enabled to study clinically a large number of cases of angina pectoris. It has been a most interesting and in some ways a profitable subject, and in a very discursive way I am going to talk to you of some of the problems and factors which have chiefly interested me. This is not a paper on angina pectoris; far from it; it is but the recital of a series of more or less associated facts concerning this syndrome which have been chiefly impressed upon me during the past four years' study.

I wonder if others of you find it as difficult as I do to entirely free the mind from the idea that angina pectoris is not a disease condition, nor yet a definite clinical picture, but a very indefinite sympton-complex which is, perhaps, little better defined now than it was originally in Heberden's original communications as "Some account of a disorder of the breast." (Royal College of Physicians, July 21, 1728.)

Most of us, I think, in our definition of the complex, consciously or unconsciously insist that it has some relationship to cardiac disorder, tho all of us realize that a symptomatology so similar as to be almost indistinguishable may originate from extracardiac conditions. For a long time clinicians have been in the habit of classing angina pectoris as true angina and pseudoangina, and to a considerable extent we have also been accustomed to speak of all those cases as pseudoangina which were not grave in their significance or portent.

My studies have lead me to feel that this is a very bad classification for the practitioner, for, if we class as pseudoangina those cases which do not seem to be, or are not, grave, we then deny that there may exist cases of true reflected cardiac pain which are not grave in their intent, and, if we class as pseudoangina that large group of cases in which reflected pain, easily confused as originating from the heart but which really develops from disease of other viscera, we deny in a way the admitted fact that these pains may in reality be very serious. My idea would be to do away entirely with the use of the term of pseudoangina and to speak of cardiac angina, reserving perhaps for this condition alone, because of usage the term of angina pectoris, and to speak of all similar anginoid conditions in terms indicating their origin, thus as pancreatic angina, gallstone angina, messenteric angina and the like. I feel that, even tho it be in a way unconsciously, such a classification would lead to a more thoro study in diagnosis; certainly the term would demand therapeutically more definite and directly applied measures than is now the case, when we largely incline in the pseudo cases to treat but for symptomatic relief.

What I have to say from now on has only to do

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* Read before the Twenty-eighth Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Aug. 31-Sept. 2, 1922.

with cardiac angina and, as you will see, I must then include in this class many cases and types which do not necessarily indicate the very serious prognostic instance which the term angina pectoris ordinarily signifies to the educated layman. To illustrate, I believe, and I think most of you will entirely agree with me, that tobacco is capable of producing a symptom-complex which in severity of symptoms and in apparent immediate outlook is as grave as in angina of any origin, and yet I have never seen a case of tobacco angina die which did not also show an autopsy pathologic lesions which tobacco alone is quite incapable of causing. Men do not die of tobacco angina, tho there is not the slightest doubt in my mind but that the pain in this toxemia is cardiac in origin. At the same time, I am quite willing to admit that, given an organic lesion such as coronary sclerosis, the abuse of tobacco will greatly intensify and accelerate the lethal progress of the clinical picture of angina pectoris.

It is a very old observation, but one so strikingly apparent to the practitioner that I am excited to comment once more on it here, that angina pectoris is a disease of the nonhospital classes. Even now I find my colleagues, whose interest in medicine is confined to the laboratory and to the hospital wards, the full time clinician, as he is called, who feels that angina pectoris is a rare and greatly overestimated disease insofar as occurence and importance go. On the other hand, men in general or internal practice who have no large hospital service tend to greatly overestimate its relative occurence and importance, especially if their practice lies mostly among the more well-to-do and important members of the community. During the past year I have seen but two definite cases of angina pectoris in a large continuous medical service, and during this same period I have seen either in my own practice or in that of my colleagues some forty cases.

Another old but still very important and interesting observation is as to the occupation of those most subject to true angina pectoris. It is not, as would be the case, were the disease of purely mechanical origin, among laborers, longshoremen, athletes and adventurers that we find angina pectoris most frequent; it is among the so-called intellectual classes and especially among those whose occupations or customs imply emotional rather than physical strain. Doctors almost top the list of sufferers from this complex; lawyers, brokers, actors, and all occupations in which emotional strain and stress preponderate are particularly prone to it. It is the intense, conscientious and introspective man who gets angina pectoris. The same trend is manifested in relation to national or racial preponderance. In my personal group of cases the Jews lead in occurrence, but those of real American ancestry follow in close order. Strangely, the Latins do not suffer so much as do the more reticent English and Scotch. The voluble races, then, you say, are those who suffer least, but no one can accuse the Jews of lacking in this quality. I am at present inclined to feel that the factor of worry is that which in an emotional way is inductive of or predisposes to angina pectoris.

Of course we must all recognize the very definite relation which syphilis plays to the evolution of angina pectoris. Concerning this more later, but, altho we all recognize the frequency of this infection among the negroes, yet angina pectoris is rare among them, even among frankly syphilitic negroes. Why? To my mind, as I have observed the condition, it occurs least frequently among those who play most, for those who have the happy faculty of play and relaxation well pronounced seem to possess some immunity against this condition.

I have spent much of my time on this phase of angina pectoris for the definite purpose of trying to stress the point that there are other elements than purely anatomic or chemical in the evolution of angina pectoris. MacKenzie, together with others, has pointed out that it occurs with herpes zoster in not infrequent instances. I am not at all sure that the herpes may not be a result of the angina pectoris rather than a cause of it or even a concomitant of it, caused perhaps by the same lesion. Rothschild and I have had under our observation recently a typical neuritis of the trunks of the left arm, occurring with secondary atrophy and palsy involving the distribution of the reflected arm pain in a case of angina pectoris. This is apparently a unique observation but quite in consonance with the herpes just mentioned.

My studies of angina pectoris have lead me largely to the original etiologic hypothesis of Heberden and of Jenner, namely, that the most common cause is coronary disease. In a very high percentage of fatal cases of angina one finds coronary sclerosis present. This is an anatomic fact but one must at the same time admit that one finds at postmortem many, many instances of very advanced coronary sclerosis without the slightest previous evidences of angina pectoris, just as one finds not so very infrequently at post mortem instances of complete thrombosis or obliteration of the coronary vessels without the slightest preceding cardiac arrythmia or even any other evidence of myocardial inefficiency.

The theory of arterial spasm has much to justify its acceptance. Probably the most convincing argument is that we know this to take place also in other vessels with resulting similar symptoms, as in the tibial and messenteric vessels and very often in arterioles which show but very little gross disease. The pain appearing in these other distributions of arterial spasm, as in intermittent claudication for example, is very like that of angina pectoris. Another very convincing argument is shown in the very prompt relief which follows in many, but by no means all, cases from the prompt administration of the vasodilators. Notably cogent does this argument seem, when we realize that this same prompt relief occurs in a great many instances, in which no general hypertension exists and even in cases of definite hypotension. Of course normal or even hypotension is no bar to arterial spasm, and general hypotension is by no means evidence that hypertension may not exist in some visceral distribution; indeed, this is quite within physiologic custom.

Bamberger, Von Neusser and, most convincing of all, MacKenzie have advanced the theory of a sensorimotor arc by means of which an organically diseased or functionally deranged viscus expresses with the symptom of pain thru peripheral vegetative fibers the existence of such a lesion. This theory is well substantiated in some instances of angina by zones or areas of hyperthesia which appear on the skin, corresponding to the heart distribution before, during or after attacks. The herpes and neuritis mentioned above are another further evidence of this relation. It is substantiated also by the considerable number of cases in which stimulation of this skin area, as by a dash of cold water, by a minute traumatism, or even from a breeze of cold air applied to the distribution, may precipitate an attack. I think that we must certainly accept this theory as one of the possible but not the exclusive mechanism concerned in the production of angina pectoris.

Cardiac muscle exhaustion has been advanced as a theory of production by very many, particularly of late since we have fallen so completely under the spell of the myogenic origin of all the cardiac activities, both good and bad. The pain, dyspnea, nausea, and other symptomatology which I have seen develop after prolonged or inordinate exercise, particularly in the untrained, have clinically seemed quite different to me, however, than the picture of an angina pectoris. Moreover, angina pectoris is quite as likely to appear, if indeed not more likely to do so, early in exercise rather than late, and after rest rather than when rest is demanded by the organism. Exercise if persisted in may break an attack. A colleague who suffers severely from this complex has found exercise to give greater relief even than the vasodilators in his particular case, tho it also causes exquisite agony for a moment. As we have already pointed out, this is not a disease of the exhausted physically but of the overwrought mentally.

There can, however, be no doubt but that angina pectoris does appear with considerable frequency in instances of muscle disease, even tho it is ordinarily relatively easy to distinguish clinically between a cardiac dilation and an angina. Nonetheless, in such cases as scarlet fever, in pneumonia and in other infections anginal symptoms are so commonly associated with definite myocardial inflammations that the relationship seems here to be fully established. As I have examined the specimens from these cases, however, I have been continually struck with the regularity with which inflammatory changes are found chiefly or exclusively located about the coronary vessels.

Unheralded angina pectoris occurs in acute rheumatic fever or in the more subacute or chronic forms of rheumatism with considerable frequency. There can be no doubt as to this. Let us recall, however, that arterial changes, often serious tho of microscopic extent, are not infrequent in rheumatism and also probably most or all cases of true rheumatism of any type or form are associated with the appearance of Aschoff bodies either in the heart muscle or elsewhere. Again, a definite anatomic lesion is present.

The nonorganic origin of angina pectoris has been argued by some on the basis that angina appears with relative frequency in gout, but I maintain that there is probably no disease in which more definite or certain lesions are present than in this. Anginal symptoms are particularly likely to develop in the course of acute gout. I saw recently with Dr. S. A. Brown the case of a prosperous man of fifty years who had long suffered from the usual manifestations of gout, not severe enough, however, to cause him to alter his customary habits of self indulgence. He was suddenly attacked with angina pectoris and, tho for a time he was able to keep about his work, which entailed considerable excitement and mental strain, the attacks finally became so severe that he was obliged to go to bed and, tho now on the most restricted diet and on absolute rest, the severity and frequency of the attacks increased so that almost constant morphine effect was demanded. Jarring of the floor by an overly officious nurse or the examinations of his physician became sufficiently exciting causes to precipitate attacks of angina. He became cyanosed, ashen grey in color during the attacks, and was in almost constant agony. A few doses of colchicine caused complete relief and a good clinical recovery followed treatment along this line.

Another patient and friend, a man who has won his way to a high place in the financial world by his own efforts and ability, has an inherited and acquired gout which has resulted in very distressing deformities. His attacks now also take on the form of angina pectoris, in his particular case, however, not accompanied by the very severe pain but more by the shock and asthenia. Complete and early relief follows antigout treatment, each relief being accompanied by a fall of vascular tension.

Mention has already been made to the occurrence of angina in syphilis. So frequently does this appear that an excellent clinician has created the aphorism that angina before forty is syphilitic. I am quite certain that this is not entirely correct. I am, however, fully convinced that the teaching is so frequently correct that it is far safer for the patient to accept it than to feel that angina in youth or relative to youth must not be assumed to be syphilitic in origin, unless the presence of syphilis can be absolutely demonstrated either by the Wassermann reaction or by clinical stigmata. Ordinarily, in cases of syphilitic angina pectoris, I have been able to find postmortem either very definite coronary disease or syphilitic myocarditis or aortitis, which amounts virtually to the same thing. As I have already attempted to impress in several previous papers, where this etiologic factor is recognized relatively early in the syndrome, cure under energetic treatment is to be fully expected. The amount and prompt degree of relief in even the long standing cases is also usually so great as to cause me to hope that every case of angina which I see is luetic.

There can be no question whatever but that aortitis, particularly one which involves the sinuses of Valsalva and the conus, induces angina. All of these instances are by no means syphilitic and it is reported that in at least some of these cases no demonstrable coronary vessel changes can be made out. Personally, I have never seen such an instance and I may, therefore, be pardoned for my skepticism. As a rule, in most cases of aortitis of whatever origin one will find on careful examination of the arch at those points, where the coronaries are given off, that a little tumulus of tissue exists near these openings, and it is easy to understand with such a lesion how under certain physiologic conditions more or less obstruction to coronary circulation occurs. This is, however, a very common lesion and by no means always causes angina. Further, a little postmortem experience will convince anyone how very easy it is to fail to find a minute focus of granulation or calcification in the walls of the coronaries, a lesion still quite capable of at least temporarily occluding the coronary circulation beyond that point. I have found such lesions in cases, in which all other portions of the vessel appeared on gross examination to be quite normal.

Albutt, in particular, has stressed the importance in angina pectoris of a periaortitis. He cites instances in which with little or no involvement of the endarterial coat cases of the symdrome have followed thickening or inflammation of the supporting tissues, especially where the pericardium blends with the adventitia of the arch. It seems to me very natural to assume in these instances either pericoronary inflammation or adhesions about the mouths of the coronaries which under certain physiologic activities of heart may amount to substantial limitation of coronary lumen. May not this same natural deduction also account for the cases of angina pectoris which are reported as apparently caused by pericarditis?

Probably all of us have seen at least clinically, and many of us at the autopsy table as well, instances of acute clinical angina pectoris demonstrated at autopsy to be due to acute coronary thrombosis, often from septic emboli or from masses of clot or tissue whipped off from diseased heart valves. There seems to be no question whatever but that the symptoms of true angina do appear in this pathologic picture which is so likely to terminate in immediate death. These cases alone have always appeared to me as sufficient to demonstrate the important, tho perhaps not exclusive, role of coronary disease in angina pectoris.

Libman in particular has most satisfactorily delineated the clinical picture of coronary embolism. It is, as you all know, by no means invariably fatal, as the pathologic anatomist is well aware of from the considerable number of old and healed lesions of this character which are found postmortem months or years afterward, in cases some of which have since been subject to anginal attacks, some not. I must confess that I am much more puzzled in accounting for the absence of angina in many such postmortem cases rather than in the failure to demonstrate lesions of the coronaries in undoubted cases of angina.

It appears to me that we are able to satisfactorily explain on an anatomic basis most if not all instances of angina pectoris. Why is it, then, that our case study so very certainly points out that there is an important emotional or psychic element present, as indicated by the definite selective tendency shown in this disease by occupational and racial preponderance? May we not at least assume for therapeutic purposes that there is an added neural factor, perhaps located in a sensitized sympathetic nervous center or in some spinal segment?

The subject of toxic angina demands at least brief consideration. Its most frequent form, that which occurs in the abuse of tobacco, has already been in part discussed. It is very questionable indeed, if tobacco causes any real anatomic alterations in the structure of the heart, and it is a clinical observation of universal acceptance that once the drug is removed quick recovery and relief of the anginal symptoms occur. Even in old users of tobacco in excess sudden anginal sensitization not at all infrequently takes place. I have long ago reported a case of an almost constant smoker who suddenly became so sensitized to tobacco that he was unable to enter a smoking room even when well ventilated without suffering from an attack of angina.

Sometimes even these sensitized persons are later on able to resume the drug, but many of them appear to be permanently sensitized and yet these same people may submit themselves to stress and physical strain entirely without the appearance of any anginoid symptoms. In other words, at least this type of toxic angina differs very materially from all other forms of angina pectoris. Similar anginas develop in coffee and tea poisoning, so I am told, but I have never seen instances of either in my work.

Very closely allied in some clinical respects to the toxic anginas is that seen in or rather that which occurs after influenza. In not few instances these terminate fatally but, where they are carefully managed, full recovery may take place. Time is a most important element, however, in the cure, and weeks or months are usually necessary before these cases are able to regain ordinary efficiency without the precipitation of anginal attacks.

I do not feel that the pathology of these cases is sufficiently understood. Theoretically one would expect a myocardial degeneration and signs and symptoms to correspond; indeed, this is present in a considerable number of cases but there are others which are not to be distinguished clinically from those of an angina pectoris due to other causes. Time does not now permit me to enter more fully into the discussion of these cases, to which I propose to devote considerable study.

We see cases of angina pectoris, in which during the paroxysm the face is flushed; in other instances the face is ashen grey or as pale as in traumatic shock. We see cases with hypertension and cases with hypotension. Some cases are relieved by stimulation, others by sedation. Most cases suffer excruciating pain, some do not. In most cases the pain is transferred along certain well defined lines or routes, in other instances it is fixed at the ensiform. Some complain chiefly of a sense of oppression, clutching or weight in the precordium, others have little or none of this. All true cases of angina pectoris, however, present a mental or nervous state, an anxiety of such character, so expressed in posture, in disregard of appearance and of everything except the business at hand as to make the condition in most cases entirely unmistakable, even to a casual observer. It is not always a simple fear of death, for many wish for death as an avenue of escape from intolerable torment. None of these patients are voluble or expressive in their agony; they stay where they are, be it sitting, standing or lying down. Absolute rest, mental and physical, is the imperative craving of all of them.

This, then, is the one dominant sign and symptom of the attack and it is that one most difficult to explain on any basis anatomic or physiologic. It is obviously very different from the fear of the anginal end, which Alexander Lambert so graphically describes as the mental attitude of the sufferer from the pseudo or hysterical angina, for those patients are voluble, restless and excited. The interpretation of this symptom and sign is, in my opinion, yet wanting, and it is the great and outstanding question of the whole disease.

Angina pectoris kills thru coronary thrombosis or occlusion, probably also thru a cutting off of cardiac circulation, by an elimination or interruption of cardiac conductivity, and thus from arterial spasm. It kills also by cardiac rupture thru an ischemic area of the myocardium, thus indirectly thru hemorrhage sometimes. In some cases the patients apparently die from shock, as in severe trauma and without the presence of postmortem lesions sufficient to adequately account for death. MacKenzie believes that some at least die from a paralysis, that is, an exhaustion of the cardiac muscle. Still other cases, judging from their clinical picture and from negative or apparently insufficient postmortem findings, die from some profound nervous or emotional shock, originating, I permit myself to surmise, in the same area or center, from which emanate the most striking and constant clinical manifestation of the attack, the terror, emotional shock, or whatever it is.

I wish to devote the remainder of my time to the discussion of the treatment of this symptom-complex and, if I appear to you to devote altogether too much time and give too much importance to the nervous or mental management of the condition, please understand that this is a premeditated crime, for I am convinced from my personal experience with the disease that we can gain very much in the management of these cases by just these means. I am also certain that a failure to thoroly grasp the importance of this phase of the question often wrecks what might be otherwise a thoroly scientific and successful management.

As a group of practitioners of medicine, I know that I do not need to call your attention to the fact that we must absolutely individualize in the management of any case of angina. There is no such thing as a routine treatment of this symptom group. Every successful treatment must be based primarily on a concept of the probable pathology at the base of the individual instance, on a correct estimate of the personality and obligations, even on the habits of the patient, and finally we must realize that the relief of the symptoms, that is of the anginal attack, important as it is, is in itself not preventative of other attacks.

I believe that it is important in just so far as possible to lessen the frequency and severity of attacks, even if need be by the use of habit-forming drugs and by seemingly overcare in the attempt to mitigate or eliminate those factors which seem in any given instance to precipitate the attacks. This is very important, for I am convinced that such a thing as an anginal habit may be formed; that the bars of resistance against attacks are lowered by their frequency and that frequency breaks out habit paths of lessened resistance, so that as the case goes on less and less of a detonating charge causes the explosion of the fully developed attack.

Along this line of thought, just a few words as to study and attempted treatment of the pathology basically at fault. This is of course best illustrated in cases of syphilis, in which vigorous antisyphilitic treatment may entirely remove the cause. This is also true in some cases of gout, in some cases of rheumatism, and I also firmly believe that full dosage of the iodides may in some instances of arterial disease of nonluetic origin entirely check or eliminate the basic disease. The use of arsenic, probably best in full doses, also seems a legitimate experiment for this purpose.

Where the precipitating cause of the paroxysm seems to be an exhausted or overstrained heart muscle, digitalis or strophanthus in appropriate dosage may lessen or check attacks. On the other hand, I am convinced that sometimes drugs of this nature increase the occurrence and severity of the attacks. Simply in these instances we have failed in our experiment, for I know of no certain way in which we may determine these cases except by experiment.

Where decreased cardiac irritability seems to be a productive factor, why not strychnia or caffeine? I know that you will find in some cases, especially those after tobacco or influenza, that these drugs lessen and influence favorably subsequent attacks. Atropine has also apparently helped some of my cases in this respect. Were they perhaps instances of bundle disease? I believe, also, that in cases after or during the acute infections arsenic may sometimes help in diminishing the anginal paroxysms.

In hypertensive cases, the bromides, chloral and the nitrites, given perhaps in small but long continued doses, have a beneficial effect. In those very numerous cases, in which emotional excitability seems to play an important exciting role, the bromides, chloral, luminal and cannibis indica have apparently helped some of my patients.

Generally rest is an almost universal preventative. There are, however, exceptions. Some men get more real emotional rest by being allowed to carry on some of their business affairs than by being put to bed and interdicted all matters of live interest to them. I well recall a man whose business affairs were in a very critical state and whose domestic anxieties, especially in view of his early expected death, were matters of critical distress to him. While I kept him in bed, forbade all business discussions and treated him as he was, a really critically ill man, attacks of angina were very frequent and extremely ungovernable. As I began to allow him more and more liberty, finally permitting him to put in seven hours in his office daily, attacks became less frequent, less severe; he got a great deal of real pleasure out of his life and so managed his complex business that ten years later, when he dropped dead seated at his desk, he was able to leave his family in comfort and security. I believe that this was good therapeutics for his case, and there are doubtless many similar ones.

I am sure that I have pursued this line of thought long enough to convey to you my ideas, tho one might go on almost indefinitely with similar instances and similar protective or preventative measures which apply to individual persons.

As to the management of the immediate attack. If we can entirely convince a patient that the anxiety and terror of the attack in their severity just so much the more endanger life, some of these patients, for we are in the main dealing with men of good intellect, are able to develop a philosophy which will minimize to a considerable degree this dangerous phase of the attack. A healthy spirit of fatalism is desirable as " a man never dies until his time comes;" "if I am to die, I shall die, if not I shall not." A doctor told me that he was able to lessen his emotional stress by the thought that at least he would not have to call again on certain disagreeable patients, were he to die in the attack then in progress. Religious philosophy, resignation and comfort are of more than speculative benefit, and the teachings of christian science beyond any doubt lessen this very dangerous element in many anginal attacks. Most of us have found that there is just one drug which helps practically all cases of acute angina. This is morphine. Its early use makes a maximum dose usually unnecessary. It gives the patient thereafter a sense of confidence in relief and it eliminates as does nothing else the dominant sense of terror which I have tonight tried to show is the most constant and distressing feature of the individual attack.

Please do not understand me to suggest that each and every patient and attack be treated by morphine, tho, as you all know, there are many cases of angina pectoris which demand this as a simple matter of humanity. If the drug is used occasionally, substituted at times by atropine, nitroglycerine, amyl nitrate, hyoscine, heroin or other measures, the effect which I desire to give may be often maintained without the too frequent use of morphine.

Where clinical study of any case has shown that amyl nitrate, nitroglycerine or other drugs will control the attack, and when the emotional element is not particularly distressing, they may of course be used in place of the morphine. So much depends on the individual character of the case.

Most of you have probably noted that in a good many instances of angina, even where a hypotension is present during the attack, still the vasodilators may give immediate relief. Perhaps there are instances of spasm of the coronaries alone with a subnormal peripheral pressure, or they may be instances of local hypertension (in the coronaries) and of peripheral hypotension.

One other instance, in which I have found the sedatives to be of preeminent value, is in cases in which coronary thrombosis has apparently taken place. As a rule the vasodilators are of little assistance, either in giving relief or in shortening the paroxysm in such cases. I have had the best success in these instances by giving the opiates in large, often very large doses, so that the patient is brought fully under the effects of the drug and held there sometimes for several days.

A recent case which I have had the opportunity of studying, in which the diagnosis of coronary thrombosis was verified by subsequent electrocardiographic studies, was thus kept under full morphine effect for two weeks before we dared to diminish the dosage. So soon as the morphine effect began to fall away, the patient would waken to great agony, the pulse would disappear, she would become cyanosed, the pressure of the brachials fall to zero and apparent collapse develop. Kept under full morphine effect for two weeks with a gradual release after two months, she was able to be up and about the room. She is now as well as before this serious attack, tho of course the cardiac reserve is lowered. She is none the less able to be up, to go out driving, and to enjoy life to a considerable degree. No subsequent attacks have taken place. I have seen similar results in other instances and I am entirely convinced that we are more than justified in using enormous doses, if need be in cases of this kind.

HISTOLOGIC AND CLINICAL STUDIES OF CERVICAL CARCINOMATA TREATED WITH GAMMA AND X-RAYS *

Henry Schmitz, M.D., F.A.C.S
CHICAGO, ILL.

The therapeutic application of x-rays and gamma rays of radium causes histologic changes in the carcinoma tumor and general constitutional and biologic reactions. The intensity of the histologic and biologic changes depends on the radiation dose applied as well as the reactive power of the host to the systemic action of the rays.

THE HISTOLOGIC CHANGES

A diagnostic excision of tumor tissue is always made at the time of the insertion of the radium and the application of the x-rays. Subsequent excisions are made at intervals of eight to fourteen days until six weeks have intervened since the beginning of the treatment. At this time the histologic changes are ordinarily completed. We are absolutely opposed to biopsy. However, if tissues are removed for diagnosis and radium is immediately applied, autovaccination of cancer elements is effectually prevented.

Subsequent microscopic studies of tissues were made in some of the cases after 3, 6, 18 and 24 months, the latter usually during postmortem examinations.

The changes in the tumor tissues seen on microscopic examination of stained sections, some of which are reproduced in Figs. 1 to 8, are fairly constant and uniform and may be divided into four stages:

1. The stage of *serous infiltration,* characterized by swelling of the cells and nuclei and a beginning exudation of lymphocytes and polymorphonuclear leucocytes. It occurs as early as the third day but usually the eighth to tenth day.

2. The stage of *degeneration* of the cell nucleus, cell protoplasm and cell wall, indicated by pyknosis or fragmentation of the nucleus, cytolysis, granulation and vacuolation of protoplasm, achromatism and cessation of mitosis.

3. The stage of *inflammatory reaction,* evidenced by leucocytic and lymphocytic infiltration, proliferation of the stroma and formation of fibroblasts and a rapid growth of blood and lymphvessels. Phagocytosis occurs simultaneously, the white blood corpuscles acting as microcytes and the fibroblasts as macrocytes.

4. The stage of *repair,* shown by replacement of the dead tumor cells with connective and granulation tissues, which become covered with epithelium, containing numerous capillaries, or, should the action of rays be destructive on account of overdosation, we will observe necrosis and scar formation devoid of blood supply.

Those changes occur successively and begin within a few days after the application of rays, to be completed with one to three months. But the regeneration processes may be delayed for a considerable length of time, depending on the radation technic and the systemic reaction.

The first two changes are due to the direct influence of the rays on each individual cell. They are an indication of the more or less intense trauma, caused by the rays in the cell nucleus, resulting in an immediate cessation of mitosis and later on a breaking up of the nucleus. The third stage expresses the reaction of the host towards the injury done. It is an inflammatory reparative process and reaches its highest and most significant function in the phagocytic action of the microcytes and macrocytes, i.e., the leucocytes, the fibroblasts and the endothelial cells. If this phagocytosis would be general thruout the tumor, the later could be completely devoured and removed. "The round, endothelial and connective tissue cells do not act as murderers but as undertakers of the degenerated cells," as Wood aptly remarks. The fourth stage is the end stage—the reparative process. Normal tissue fills the excavations in the tumor substance and the surface epithelium regenerates, or necrosis occurs and healing results in scar formation.

The intensity of these inflammatory and reparative changes depends on: (1) the intensity of the radium application which is contingent on the amount of element used, the size and form of the capsules, the time duration observed in the application, the screening employed, the distances maintained, and the extent and character of the growth; (2) the quality and quantity of the x-rays which depend on the voltage, the milliamperage, the focus skin distance, the filter, the size and number of the fields of entry, and the time duration of the application of the entire treatment.

Ewing has published a valuable paper, in which he discusses the tumor degenerations brought about by the use of radium rays. He seems to attribute equal importance to the nuclear and cellular

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* Read before the Twenty-eighth Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Aug. 31-Sept. 2, 1922.

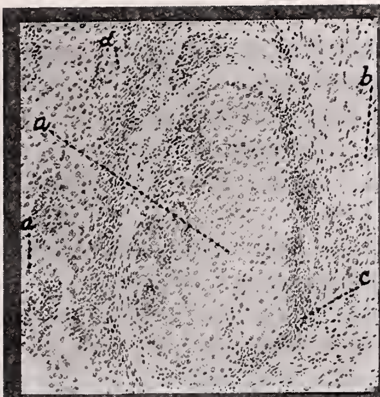


Fig. 1

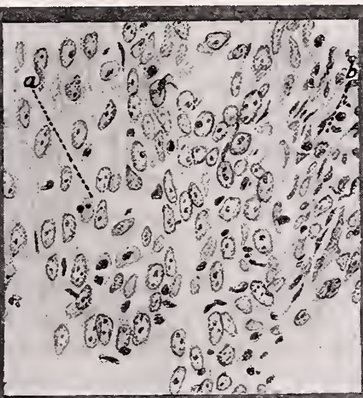


Fig. 2

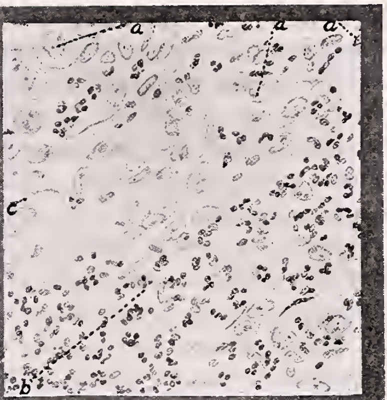
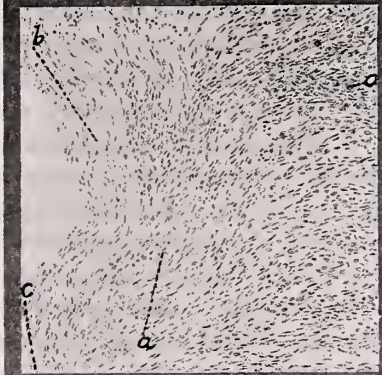


Fig. 3



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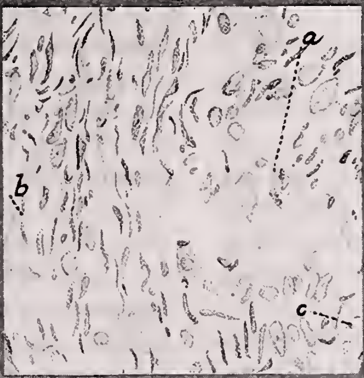

Fig. 5

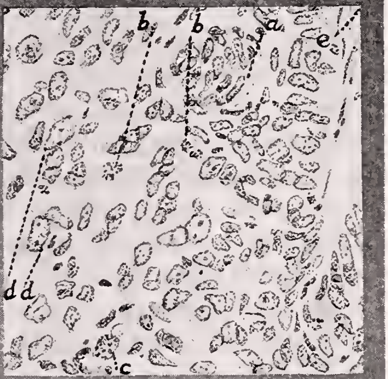

Fig. 6

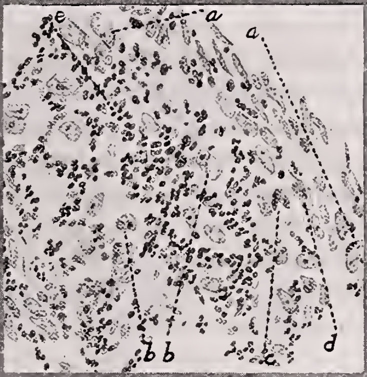

Fig. 7

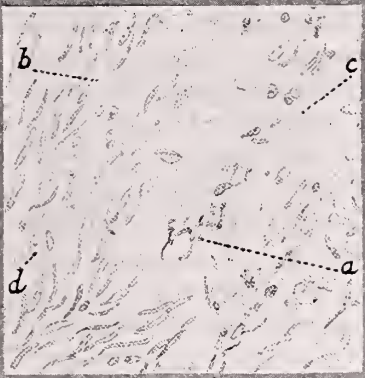

Fig. 8

Fig. 1 (Case 33).—Carcinoma, portio vaginalis, cervix uteri. Low power reproduction of tissues removed Feb. 6, 1915, at beginning of treatment: a, squamous cell carcinoma; b, connective tissue; c, lymphocytic infilration; d, area reproduced in Figure 2.

Fig. 2 (Case 33).—High power magnification of Area d in Figure 1: a, carcinoma cells; b, connective tissue.

Fig. 3 (Case 33).—High power magnification of tissue removed Feb. 18, 1915, after 2,400 milligram hours of radium element had been applied from Feb. 6 to 8, 1915: a, enlarged carcinoma cells; b, lymphocytio infiltration; c, note connective tissue fibers surrounding groups of carcinoma cells.

Fig. 4 (Case 33).—Low power magnification of a section of tissue removed Feb. 28, 1915, after 4,800 milligram hours of radium element had been applied from Feb. 6 to 8 and Feb. 18 to 20, 1915: a, carcinoma cells; b, connective tissue cells; c, area reproduced in Figure 5 under high power.

Fig. 5 (Case 33).—High power magnification of area marked c in Figure 4: a, area of necrobiotic tissue; b, area of connective tissue; c, cytolytic carcinoma cell.

Fig. 6 (Case 39).—High power reproduction of cervical tissue removed March 16, 1915: a, nest of carcinoma cells; b, karyolysis of nuclei; c, granulation of protoplasm; d, vacuolation of protoplasm; e, connective tissue.

Fig. 7 (Case 39).—High power magnification of tissue removed from center of cervix, March 28, 1915, after 1,600 milligram hours of radium element had been applied from March 20 to 26, 1915: a, degeneration of nuclei; b, granulation of protoplasm; c, degenerating carcinoma cell; d, mitosis of cell; e, lymphocytes.

Fig. 8 (Case 39).—High power magnification of tissue removed April 7, 1915, after 3,700 milligram hours of radium element had been applied from March 20 to April 4, 1914: a, macrophagia-connective tissue cells; b, connective tissue cells; c, necrobiotic carcinoma cell; d, vacuolation of protoplasm.

changes. Prime observed in experiments made on normal and abnormal cells in vitro that radium in sufficiently large doses will so injure the nucleus of the cell as to prevent further mitosis. Such radiumized tissue will not grow when inoculated in mice. He concluded that radium does not kill the cells outright, but injures the nucleus in such a manner as to prevent further division which must eventually result in the death of the cell, if its energy is expended in growth and division and not in a purely mechanical function. The changes in radiumized tissues are usually observed very much sooner than after a course of x-ray treatment. However, if we wait and do not expose the patient to another radiation, the same results will be observed, tho it may take twelve weeks instead of three to six weeks, as seen after radium applications.

In the foregoing we have assumed that the action of rays is alike in all the cellular varieties of cervical carcinomata. However, on more minute investigation we find that the cellular changes caused by rays vary, depending on the histologic structure of the neoplasm.

The squamous cell carcinoma of the cervix, characterized by hornification or epithelial pearl formation, usually evidences a papillary arrangement of cells, i.e., cone formation with epithelial pearls, edematous loose connective tissue and round cell infiltration, consisting of plasma cells, eosinophiles, mast-cells, leucocytes and lymphocytes. This epitheloid carcinoma or acanthoma is usually found in the cauliflower-like tumor, which is an everting, rapidly proliferating cancer without simultaneous extension into the tissues.

The changes caused by radium and x-rays in the cells of the hornifying epithelioma are cytolysis and karyorrhexis, as vacuolation and granulation of protoplasm, destruction of the cell wall, destruction of the nucleus into amorphous debris and so forth, round cell infiltration and later on fibroblastic formation. The round cell infiltration is especially rich in eosinophiles, while connective tissue formation is really of secondary importance, the tumor disappearing by the action of phagocytes and necrophytes.

The basal celled epithelioma of the cervix is mostly found in the infiltrating variety of cervical carcinoma. The rays cause a necrosis in the central portion of the cones of alveoli, characterized by the formation of amorphous masses and cell detritus, while the peripheral cells remain unchanged for a long time. As the action of the rays is latent, and cervical carcinoma infiltrating the entire vaginal if a lethal dose has been applied, all the cells become finally similarly destroyed and removed by phagocytes. The vacancies in the tissues are rapidly filled by fibroblasts. Necrosis and connective tissue formation are the characteristic reparation processes in this variety of carcinoma.

The adenocarcinoma shows a tendency to further growth when exposed to rays. However, it soon succumbs, if treatment has been correctly applied. Rapid degeneration of carcinoma cells with a rapid and profuse formation of fibroblasts are the regenerative processes characteristic for this cell growth.

These cell studies prove the possibilities of the therapeutic action of irradiation. However, they do not prove the unlimited power of peneration and the homogeneity of the rays, i.e., qualitative and quantitative homogeneity as first propounded by Dessauer. To do this we must have recourse to postmortem findings. We succeeded in obtaining the pelvic organs in toto of two women who died from intercurrent diseases subsequent to the administration of radium and x-rays for carcinoma of the cervix. The microscopic tissue findings are herewith given.

The first patient was treated March 9, 1915, with gamma rays and x-rays. The microscopic diagnosis was adenocarcinoma of the endocervix. She succumbed to left hydronephrosis, hydroureter and intestinal obstruction on March 10, 1917.

The postmortem examination revealed a complete obstruction of the rectum, due to a firm mass in the pelvis compressing the bowel and hydroureter and hydronephrosis on the left side, due to compression of the ureter by the same mass. The pelvic organs were removed in one mass. This was cut in blocks, hardened and subjected to microscopic studies. Carcinoma cells were seen in the sections. They were in a stage of pronounced degeneration and isolated, nowhere appearing in nests or solid masses. There was marked connective tissue formation thruout and the granulation tissue formation was very marked in the parametrium.

The absence of viable cercinoma cells proved the power of penetration of the rays with a sufficient intensity to cause degeneration of carcinoma cells in the glands adjacent to the bony pelvis. The granulation process was evidently the cause of the progressive cicatricial contraction that led to an obstruction of bowel and ureter and ultimately to death.

The other patient was admitted to the Augustana

Hospital in October, 1914, with a diagnosis of walls and both parametria. Gamma rays were given with 50 mg. radium element for twenty-four hours on October 17, and again on November 28. The microscopic examination was medullary epithelioid carcinoma. The patient died suddenly January 21, 1915.

The pelvis organs were removed in toto the same day and examined in the same manner as in the former case. Viable cancer masses were evident in places, tho degeneration was seen everywhere. It was evident that we did not succeed in killing off all of the tumor. The amount of gamma radiation applied in this case was larger than that used in the previous one. However, six weeks elapsed between the first and subsequent applications of radium. Also she did not receive x-rays. The effects of the first application could not be added to those of the subsequent course. Hence deficient dosation is responsible for the negative results.

THE CONSTITUTIONAL REACTION

The employment of radiations in any form leads to a constitutional reaction which varies in the time of onset according to the dosage and the character of the rays, the type and location of the tumor or tissue, and the systemic condition of the patient. The constitutional reaction results from the changes occurring in the blood by the direct absorption of the rays by the white blood corpuscles and from the degeneration set up in the growth by the action of the rays, which leads to an absorption of liberated protein and ferments into the circulation of the patient.

An exact examination of the patient prior to the institution of radiation treatment is necessary to enable the physician to interpret the constitutional reaction produced by the rays. This examination must include the pulse, temperature and respiration, the weight, a complete examination of the blood, including a differential white count and a qualitative and quantitative urine analysis. These examinations should be repeated daily. It is only in this way that we are able to correctly interpret the general state of health of the patient, the constitutional reaction to radiation treatment and the subsequent course of the cancer disease.

The pulse-rate gives us valuable information about the influence of the disease on the general condition of the patient. A rapid pulse is usually associated with an advanced cachexia or complicating infection. A rise in temperature indicates either a complicating infection or extensive destruction, necrosis or absorption of tumor debris. Abnormal constituents in the urine may mean organic kidney disease, constitutional disease as diabetes mellitus, secondary disturbances set up by the influence of the tumor on the general condition, or an actual invasion of the urinary tract by the tumor. Increase in the total nitrogen and purin base output is a direct result of radiation. A low percentage of hemoglobin, a decrease in the number of erythrocytes, and a leucocytosis with neutrophilia may mean a secondary anemia, due to hemorrhage, cachexia or an active infectious process. If all of these signs are absent, the general condition of the patient must be interpreted as good. If one or all are present, they indicate either advanced cancer disease, or other associated diseases or constitutional reaction from the radiation treatment. It is obvious that we could not determine the presence of the latter, if a painstaking examination did not precede the radiation treatment.

The changes in the blood by rays concern chiefly the white cells. They generally permit a corroboration of the clinical diagnosis and prognosis, if we consider (1) the influence of constitutional anomalies; (2) the influence of complicating diseases as tuberculosis; (3) the influence of the disease proper; and (4) the size of the radiation dose and the region of the body radiated.

The changes in the blood picture of cancer patients run parallel to the gravity of the disease. An increase in the polymorphonuclear neutrophiles is always present in advanced cases but especially after radiation. Is is a sign of either a stimulating reaction of the bloodforming organs or an indication of the reparative process, if leukopenia has been caused by the radiation.

The prognosis depends on a complete restitution of the blood picture to normal.

A lymphocytosis occurring after a postradiation leukopenia is not necessarily a favorable prognostic sign, if it is not secondarily dependent on a neutrophilia, when it would be a relative leukopenia.

The intensity of the leukopenia after radiation depends on (1) the abundance and size of the bloodvessels within the radiation area; (2) the numerical abundance in this area of young bloodcells, i.e., hematopoietic organs; and (3) the radiation dose. Since 1 and 2 are always known, the number of leucocytes gives an estimate of the sufficiency or insufficiency of the radiation dose. For instance, after the radiation of malignant tumors at a certain region and depth of the body, we usually observe a decrease of 3000 to 4000 in the number of leucocytes. If the leukopenia does not appear, we may expect a negative result from the treatment due to underdosation. The destruction of the white bloodcells is a direct result of the radiation.

The clinical symptoms of the systemic reaction resemble an acute intoxication. They include extreme prostration and such gastrointestinal symptoms as vomiting, anorexia, diarrhea, frequent and painful urinations, an increase in the pulse rate and a rise in temperature. The symptoms are the result of systemic intoxication from the destruction of cells by the rays. The liberated protein ferments are carried away by the blood and lymph-vessels. They are a gastrointestinal poison. The tissue injury may be so great and tissue catabolism so increased that the toxemia may become very severe and cause death.

An organism not weakened by tumor disease is much more able to resist the toxemia resulting from the action of the rays and much more capable to respond to the sudden demand on the organism for the complete disintegration and excretion of a large amount of the products of tissue breakdown. Should the leukopenia persist or the toxemia become dangerous to life, we unhesitatingly proceed to transfuse large amounts of blood by the N. M. Percy method. It almost invariably subdues these two danger signals and enables the patient to go thru a normal postradiation convalescence.

Many facts also go far to prove that an active immunization is produced by the action of radium or x-rays on malignant cells. If radium or x-rays would simply kill the cells, then they would not be superior to the knife or any cauterizing agent. The proteins of the cancer cells liberated under the influence of the rays are thrown into the blood or lymph streams, producing specific antibodies for other similar cancer cells in the tissues of the patient. Morson, Wedd and Russ, Blumenthal, and Behne have confirmed this contention by expeirments carried on in animals as well as men.

Behne transfused the blood of radiated animals into nonradiated animals. It caused the same changes in the leucocytes and lymphocytes as direct radiation. Transfusion of blood of nonradiated animals into control animals did not show the same changes. Undoubtedly we must assume that the changes in the blood are caused by the rays. The blood of radiated animals put into the nonradiated animal causes physiologic disturbances. This explains the so-called distant action of the rays. It may be observed for instance in patients with breast cancers. The ray treatment to the region of the chest often causes amenorrhea, due to metabolic disturbances. It also explains the disturbances in the gastrointestinal tract, tho it was not exposed to the rays.

The intensity of these constitutional reactions depends on the size of the area of the body radiated. Large fields exposed to the action of the rays cause more intense constitutional reactions.

Kok applied a double erythema skin dose measured with an iontoquantimeter to the thigh of a mouse without detrimental effects. A dose of not more than one-twelfth this amount was lethal, if the entire animal was exposed to the rays. He does not state whether this exposure was sufficient to damage the entire body surface, also whether a rise in temperature was observed.

Hence, if living malignant cells are necessary for the production of an autogenous vaccine, a preradiation removal of cancer cells would not be advisable. The radiologist also must prevent a too extensive destruction of normal and malignant tissues, and an insufficient modification or degeneration of malignant cells. If the treatment is too radical, antibodies necessary for the complete removal of all cancer cells are not produced. If too small, the action may arrest the growth for the time but recurrences must be expected.

CONCLUSIONS

1. The degenerations observed in radiated carcinoma cells are fairly uniform and affect mainly the nucleus which becomes destroyed and the cell is rendered harmless. They are an indication of the efficacy of radium and x-rays in the successful treatment of carcinomata, if a qualitatively and quantitatively homogeneous radiation has been applied to the entire cancer area.

2. The raparative process in the diseased tissues varies, depending on the radiation dose and the reactive powers of the patient.

3. Refractory results after a correct radiation treatment may be explained from a lowered resistance of the patient. She cannot activate the antibodies that are necessary for the systemic reaction. A persistent leucopenia means a bad prognosis. An absence of all constitutional reactions indicates a system so weakened by the disease that treatment is hopeless.

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AN APPRAISAL OF ENDOCRINOLOGY

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(Concluded)

Let us now consider briefly a few of the recent investigations as regards other incretory organs. In case of the adrenal glands, relatively little of immediate clinical interest has been recently accomplished. The ten year controversy between Stewart of Cleveland and Cannon of Boston continues to wage merrily, with Stewart apparently losing ground. Cannon has, within the past two years, assembled an imposing array of evidence in favor of his well known emergency theory of adrenal function. As Stewart himself admits, we have satisfactory proof that stimulation of the nerves to the adrenals causes augmented discharge and this is strong a priori evidence that the glands are under central control and subject to reflex discharge. Indeed, Stewart and Rogoff have offered definite evidence of central control. My personal belief is that the evidence is sufficiently impressive that the Cannon theory can be accepted as at least probably true.

Several observers have offered evidence that the adrenals have an important relation to muscular activity. Gruber has shown that muscle recovers from fatigue with remarkable promptness under the influence of adrenalin. Muscles of cats can even be made to contract vigorously two hours after death, if they are perfused with the drug. This beneficial effect, according to Gruber's latest work, is not confined to dead or fatigued muscle, being shown to a lesser degree when unfatigued preparations are used. Hartman for the past two or three years has been studying the relation of adrenal discharge to muscular efficiency in cats working in a revolving cage. In his most convincing experiments the pupil on one side is completely denervated and by its dilation serves as a signal when adrenalin is being discharged. Briefly, Hartman has found that the muscular performance of a cat is correlated with adrenal discharge. Often when the animal begins to show signs of distress from overexertion the denervated pupil suddenly flares out and the cat simultaneously acquires "second wind." It is suggested that the warming up of athletes is largely a matter of arousing enough stimuli to initiate adrenal discharge. In other experiments the adrenal glands were removed or denervated, either of which procedure prevents any detectable discharge of adrenalin. Such cats were then fatigued to the point of distress and adrenalin artificially administered. In many instances this was shown materially to improve performance.

The problem of how adrenalin produces its beneficial effects in the muscular tissues is yet unsolved. It was shown by Boothby and Sandiford some three years ago that even as little as 0.2 mg. adrenalin injected subcutaneously into an adult would cause a distinct rise in basal metabolism. Martin and Armisted of Leland Stanford have recently shown that the CO_2 output of frog's muscle, as well as various other tissues, is materially increased by adrenalin with the muscle substance has not, so far as I am aware been directly studied until this fall, tho from the large effect of minute quantities it could be deduced that such combination is not the essential feature. Durrant and I have recently had the problem under investigation. The method has been, very briefly, to inject adrenalin into the common iliac artery of one side and not the effect on general blood pressure. The corresponding leg is then severely fatigued and the same dose of adrenalin again passed thru the fatigued structure. The results indicate that there is no increase in the amount of adrenalin absorption in the fatigued as compared with the non-fatigued muscle. This indicates, obviously, that no chemical combination has taken place, hence the effect is apparently to be ascribed to catalysis of respiration. This conclusion has also recently been recorded by Boothby and Sandiford in connection with an extensive investigation of the effects of adrenalin on basal metabolism in dogs.

Marine of New York has recently repeated some older experiments which indicate that within a few hours of adrenal destruction the basal metabolism of an animal is increased. He favors the theory that this indicates overactivity of the thyroid, hence that the adrenal is a normal antagonist of the thyroid. Upon this basis he has been treating exophthalmic goiter by the administration of whole gland adrenal preparations with what he believes to be successful results. A few other writers have similarly reported good results from such treatment, using various adrenal preparations.

Certain German surgeons recently have been experimenting with unilateral adrenal extirpation for the alleviation of epilepsy in man. Altho some favorable results have been reported, the trend of the evidence seems to be that such treatment is not advisable. It is to be remembered in this connection that epileptics are prone to improve temporarily upon any change in treatment.

Just now the sex glands are coming in for a great deal of attention, especially at the hands of newspaper reporters. It is probable that few American newspapers have failed to print some variant of the witicism that when a "monkey gland" operation is performed three monkeys are involved, the donor, the recipient and the surgeon. It is interesting to note that the first experiment in endocrinology was that of Berthold of Göttingen, who reported in 1849 that castrated cockerels went on to develop normal sex characteristics, when some of the removed testicular tissue was engrafted upon the intestinal peritoneum. It is interesting, too, that the "birthday of endocrinology" was established by Brown-Sequard in 1889, when he reported sensational rejuvenating effects of testicular extracts upon himself. While this particular experiment mostly failed of conformation at the hands of his contemporaries, but was widely exploited by charlatans, and Brown-Sequard, himself, was thereby widely discredited, so great was the interest aroused that endocrine experimentation was soon vigorously in course thruout the medical scientific world. When, shortly afterward, Murray and other British clinicians showed that thyroid preparations are efficacious in myxedema, the idea of organotherapy began to intrigue the medical profession, with the result of twenty years of world wide activity.

Thru the results of centuries of experience the effects of gonad deficiencies in man and in the domestic animals are very well known. It was not until recently, however, that it began to be understood that results of castration are probably due to resulting endocrine deficiencies, the earlier assumption being that changes in the nervous system associated with the generative organs were entirely due to abnormal conditions of excitation or lack of normal stimuli from the peripheral structures. Schafer, a conservative endocrinologist, states that there is no longer any question that the primary sex glands have an internal secretion and that this comes, not from the generative elements, but from the interstitial cells. In Germany, however, where the subject has been under a great deal of discussion since the war, some doubt remains in the minds of various students whether the hormone may not after all come from the germinal elements. This hormone, incidentally, is not "spermin" which is a definitely established protein body.

The evidence as regards the specific influence of the intestitial cells may be summarized. The reproductive cells can be destroyed by x-rays without any detectable influence on the sexual habitus or the sexual psychology. Occasionally an individual is found to have sex glands in which no generative elements are found, but, if the interstitial cells are present, this subject also appears normal. On the other hand, if the gonads containing only intestitial cells and the connective elements are extirpated, the symptoms of castration promptly appear. If the operation is done before puberty, the subject remains sexually infantile thruout life. If done in the postpuberal period, there is a regression of the secondary sex characters to the infantile condition. Not only, however, are the sex organs affected, but also changes are noted in the functions of the nervous system and in the psychology of the subject.

Some years ago Steinach reported an interesting series of experiments, demonstrating these points in rats to a nicety. A young male was castrated and allowed to come to maturity. It remained sexually neutral. Similarly, a female from which the ovaries were taken remained in a neutral condition. If, however, into a spayed female the testes of a brother were grafted, the subject then developed along characteristic male lines. The bones showed male characteristics in form and size, the hair became coarse and the subject addicted to dalliance with normal females. If the conditions were reversed, ovaries from the female being grafted into a castrated brother, this subject showed female development, the mammary glands hypertrophied and the animal was wooed by normal males. The experiments were repeated many times. The work has been confirmed by Moore in this country, Sand in Denmark and Lipschutz in Ethonia. Thus the important fact appears to be firmly established that in some experimental animals, at least, very striking transformations toward either the feminine or the masculine type can be induced by gland grafting. Steinach reported that he was unable to produce hermaphrodites, but Moore has reported success in the endeavor, the individual having both viable ovary and testicle gland elements, and showing mixed male and female characteristics.

Despite the purient curiosity of the public, which renders experimental work along these lines such excellent newspaper copy, it is plainly the duty of surgeons to determine definitely the possibilities and the limitations of gland grafting in human subjects. Obviously, however, the less publicity that attends such studies the better. Lydston of Chicago claims priority for having shown the possibility of effective gland grafting in men. Work has been done also by Lespinasse, Stanley, and others in this country and by Vorroff of Paris.

Altho in the nature of a preliminary qualitative survey, the work of Stanley is particularly important, in that his series now runs past 650 human subjects. The work is significant also, in that a fair degree of control has automatically come about from the fact that his subjects were for the most part penitentiary prisoners. This work was begun in January, 1920, and the last reported work was done in February, 1922. In all, one thousand implantations were made. To quote directly from Stanley: "Striking objective improvement was seen in numerous cases of general asthenia, acne vulgaris, asthma and senility. Subjective or objective improvement was seen in various cases of rheumatism, neurasthenia, poor vision and a few other conditions. In general, testicular substance seems often to have a beneficial effect in relieving pain of obscure origin and promotion of bodily well being. The operation is practically painless and harmless." It would seem from the evidence now available that most significant effects are not to be noted essentially in the sex field, altho at times striking improvement of impotence has been reported. In extension of such work careful metabolic studies are particularly needed.

Recently Steinach has been working along somewhat different lines. With very careful technic to avoid injury of blood vessels, the efferent ducts of the testes are ligated. Following this, a marked degeneration of the sexual cells takes place. Steinach's theory is that the nutrition of the gland is then all thrown to the interstitial cells, which thereupon form an augmented amount of their characteristic hormone. The subjects are reported both by Steinach and by Sand to show varying degrees of rejuvenation. To what extent the effects are subjective is, of course, difficult to determine. Sand, however, has reported a ligation experiment in a dog showing marked evidence of senility. After the operation the animal became much more active, its nutrition improved and it took up as a favorite diversion accompanying its master on bicycle rides. In this case, suggestion could hardly have played a part; but we should not forget the long arm of coincidence.

Now what of the future of endocrinology? Prophesies in the field of science are proverbially dangerous, but it seems sufficiently apparent that we are as yet but on the threshold. If the hypothysis can produce giants, and Smith of California has definitely produced experimental hypophyseal giants, may we not expect to obtain from this gland an important growth stimulant for clinical use? Why do some men die of old age at sixty and others go on to a hale and hearty century of existence? The average man has but learned to live, when he must prepare to die. There is no little reason to hope that endocrinology holds the key to the problem of senility. What are the mechanisms by which man adapts himself to change of season, change of climate, change of diet? Here, too, the incretory organs probably play an important part. These are but a few hints of the underlying fascination of endocrinology.

The field bristles with important problems at every turn. Indeed, some of the most elementary facts remain yet to be determined. What is a normal human thyroid, a normal hypophysis? No one exactly knows. There is need of many exacting studies of the architecture, the quantitative make up, of the other glands such as Hammar has made of the thymus, and as Rasmussen is making of the hypophysis.

What part of the incretory glands play in determining the constitution of the individual—his liability to various diseases and his bodily configuration? We need many careful studies of the endocrine glands in all the recognizable constitutional types. The literature along this line, altho voluminous, is sadly lacking in conclusive data.

These are some of the larger problems. Each, in turn, resolves itself into numerous questions of detail. The field is great, the workers few. In no field of biology or medicine is the path of the investigator beset with more pitfalls and dangers. That the difficulties are beginning to be widely appreciated is the most encouraging sign of the times. Endocrinology offers no easy path to fame, but to the man who is willing to pay the price of patient, exacting work, the field beckons enticingly.

In conclusion, may I register a plea for more keen discrimination. Scientific endocrinology deserves well of the medical profession, but mere pseudoscience, with its vagaries and fantastic theorizing, deserves the ridicule it invites. May sound workmanship on the one hand, and careless endocrine impressionism on the other, each increasingly receive its due.

A TECHNIC TO REDUCE THE INCIDENCE OF HEADACHE FOLLOWING LUMBAR PUNCTURE IN AMBULATORY PATIENTS WITH A PLEA FOR MORE FREQUENT EXAMINATION OF CEREBROSPINAL FLUIDS *

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The frequent prolonged and disagreeable symptoms following lumbar puncture induced the writer to make a study of the mechanics involved in this operation, and to devise an operation which would be free from danger, painless to the patient and devoid of bad after effects.

I.

ANATOMY AND HISTOLOGY

By a survey of the anatomy and histology of the spinal dura mater, we observe that it is made up entirely of fibers which have a longitudinal arrangement, and for the most part these fibers are parallel to one another. Both surfaces of this fibrous tissue are covered with endothelial cells.

EXPERIMENTAL PUNCTURES

Experimental punctures were made with a variety of needles thru pieces of spinal dura and by the aid of the microscope we were able to calculate the amount of destruction produced when a large blunt needle was used (see cut), and to obtain an idea of the length of time required to repair the trauma thus produced. We were led to believe that the headache, vertigo, nausea and deaths, following a puncture done under asceptic precautions, were due to leakage of the cerebrospinal fluid in a great majority of cases.

Sections of spinal dura with cord attached were obtained and suspended. The dura was filled with water and then punctured at its lowest portion with different kinds of needles in order to observe the actual leakage coming thru the different kinds of holes made by the needles used. Leakage followed every puncture, even the smallest guaged hypodermic needle, and the size of the leak in nearly every instance was in proportion to the size of the needle used in making the puncture. When large sized lumbar puncture needles with cutting ends were used, the arachnoid membrane would herniate thru the puncture and impede the flow; but in no instance was the puncture sealed by the arachnoid drifting into it.

From these experiments we deduced that one of the requirements for scientific puncture would be a small needle with a smooth round point, similar to that of an ordinary cambric needle. Such a needle would not destroy any of the fibers composing the dura and could not create and leave a large hole after its withdrawal. The arachnoid membranes would be unable to drift thru a hole of this character and, tho there would be leakage of the cerebrospinal fluid, it would of necessity be slow. At any rate the choroid plexus and other sources of the fluid, if there be any, would have a chance to secrete or excrete sufficient to compensate in a measure for leakage sufficient to produce symptoms.

SIZE OF THE NEEDLE

Many authorities writing on the subject of lumbar puncture mention the use of a trocar. The

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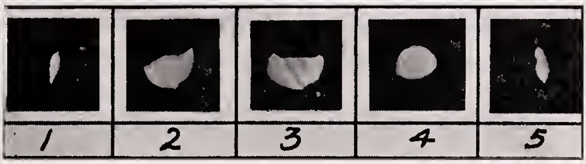
* Read before Walla Walla Valley Medical Society, Walla Walla, Wash., May 8, 1923.

late writings by some of the authors mention that disagreeable symptoms like headache, etc., do not follow the puncture with a small needle, as often as when a large needle is used. Lumbar puncture needles on the market are as a rule not smaller than 20 gauge and more often No. 14 to No. 18 gauge.

The puncture of an ambulatory patient with a needle of this size will result in headache in a large percentage of cases, and this headache, we believe, results from a leakage of the spinal fluid sufficient to leave the brain without a water cushion. The leakage is the result of the destruction of the longitudinal fibers composing the dural sac and the mutilation of the endothelial covering which necessarily follows the use of a large trocar or needle with a cutting end. A small needle with a round pointed end will enter the dural sac by passing between the fibers without severing any of them, and with a minimum of trauma to the endothelial coverings of the outside and inside of the sac. When an instrument of this character is withdrawn, the longitudinal fibers will approximate themselves and bring with them the endothelial coverings, so that union can immediately begin without extensive repair of tissue having to be made. We advocate that lumbar puncture for diagnostic purposes be done in all cases with a small round pointed needle, and we have demonstrated that it is safer, more feasable, and much easier when thus performed.



Microphotographs of holes made in spinal dura mater by lumbar puncture needles. These punctures were made on the same piece of dura, mounted on a slide, and photographed thru the microscope without changing the focus, in order to preserve relative proportions.

1. Hole made by gauge No. 23 needle with a point that is round and sharp like a cambric needle. No fibers of the dura have been destroyed.

2. Hole made by gauge No. 18 needle with a beveled cutting end. The cutting end was transverse to the fibers of the dura. Note the semicircular flap and the destruction of dural fibers by this size and kind of needles.

3. Hole made by the same gauge No. 18 needle, except the cutting end was longitudinal with the fibers of the dura in this puncture. The same semicircular flap appears, except the dural fibers composing the flap are severed in two places.

4. Hole made by gauge No. 20 needle with the cutting end applied as in No. 2. Note the same flap formation except smaller.

5. Hole made by the same gauge No. 20 needle as was used in No. 4 after the end had been sharpened to a round sharp point to remove all cutting edges.

REQUIREMENTS OF THE NEEDLE

For a successful puncture in an ambulatory patient the needle must be small enough and the point smooth and sharp enough to pierce the finest closely woven silk or other delicate fabric without cutting or breaking any of the threads.

A lumbar puncture can be done with ease with guage No. 26 needle, but it is unhandy to manipulate an obturator for a needle of this size, and it is slow and tedious obtaining a 10 c.c. sample of spinal fluid thru such a small calibre. A guage No. 23 needle has a calibre to easily admit as an obturator an "E" violin string. This needle is not reinforced in any way and has the ordinary Luer hub. No stopcocks, T's, or any other fixture is required, as the smallness of the lumen automatically controls the flow of the fluid, either in or out, to the advantage of both the patient and the operator.

The instrument should be of trusty steel and free from rust on both the inside and outside. Its temper should be soft, so that it will bend before it will break. It requires cleaning, sharpening, and inspection each day that it is used in order to secure the best results. No needle should be used, if rusty from the lack of care or if it has been used for the injection of any of the salts of mercury or other chemical which might have a corrosive action on the metal, causing a deterioration of the instrument, and also a contamination of the spinal fluid, which will interfere with the cell count and influence the chemical and serologic findings.

The inside of a spinal puncture needle should be as clean and bright as the inside of a well kept gun barrel. The outside should be kept bright and smooth and there should be no burr on the point or cutting edges around the lumen which would destroy any of the fibers of the dura; because upon this point hinges the success of lumbar puncture, few of which are followed by headache and other untoward symptoms.

OBJECTION TO A SMALL NEEDLE

The fear of breaking the needle is the deterring factor preventing the use of a small needle. This accident will happen no oftener with a small needle than with a large one, if ordinary skill and good judgment are used in applying force to the instrument. There is a knack in doing a lumbar puncture and the trick is not to break the needle. Another objection to the use of a small needle is that more time is required to obtain a pressure reading.

Aspiration is required when a small calibred needle is used. Webster[1] states that, "No aspiration should be used at any time, as this procedure is extremely dangerous." We have never found aspiration followed by any untoward symptoms, and instead of being an objectionable procedure, it is believed, on consideration, to be an advantage to both the patient and operator.

ADVANTAGES OF ASPIRATION

Sometimes there is a pathologic condition around or near the medulla oblongata which interferes with the free passage of the cerebrospinal fluid from the cavity of the skull to the spinal dural sac. This condition, undisturbed, is compatible with life and, so long as the pressure above and below this point remains relatively the same, very little, if any trouble is experienced by the patient on this account. However, when fluid is withdrawn by lumbar puncture, the disturbance in the pressure may be sufficient to produce grave symptoms which will be followed by death, if the medulla is jammed into the foramen magnum by the high pressure from above, and the same would be brought about by creating a vacuum below by aspiration, which would suck the medulla into the foramen magnum.

In case No. 256, who had a cerebral apoplexy one year previously, puncture was done with a guage No. 24 needle and a sample of spinal fluid was obtained by aspiration. After 8 c.c. had been withdrawn the patient began to complain of difficulty in breathing and a queer feeling all over the body. Aspiration was stopped, but the aspirating syringe containing the spinal fluid withdrawn was left connected to the lumbar puncture needle. It was my intention to replace the fluid, if the severity of the symptoms warranted. During the space of a minute or two the difficulty of breathing had passed away and the queer feeling was subsiding. The lumbar puncture needle was then withdrawn without replacing any of the fluid obtained. No bad effects followed.

When a puncture is being done we hasten to connect the aspirating syringe as soon as fluid appears in the hub of the needle and feel that it is safer to obtain the entire sample by aspiration which should be very slow in each case and should be done with the greatest caution and deliberation. By this procedure the operator has complete control of the situation and, in case untoward symptoms should develop on account of the withdrawal of the spinal fluid, the reestablishment of the former condition by its replacement would be the first indication. We know of no other measure which would be more efficient, which could be applied with greater dispatch, or to any better advantage in an emergency like this. Therefore, we recommend the use of the aspirating syringe in the operation of lumbar puncture for the withdrawal of the spinal fluid, if the same is used in a prudent and cautious manner; for in so doing we are forearmed and prepared to combat an emergency in the most effective way.

PREPARATION FOR THE OPERATION

After the patient is in position to the liking of the operator, preferably on a table and lying on the right side with the spine moderately and comfortably flexed, the site of the puncture is selected in the lower lumbar region. The inferior articular processes of the fifth lumbar vertebra are the widest apart, so that the space available for puncture between these processes is three times as great as is found between the inferior articular processes of the second or third lumbar vertebra.

After the skin is disinfected, preferably with ordinary tincture of iodine, 10 to 15 minims of a freshly prepared novocaine solution are injected into the skin. Ascertain by pressure on this welt its relative location to the spines of the vertebra and make a prospective puncture with a guage No. 22 needle, 1¼ inches long, and inject some novocaine into and under the interspinous ligament, avoiding hair follicles and glands of the skin as a precautionary measure against the infection they mav contain.

PUNCTURE WITH A SMALL SLENDER NEEDLE

The operator should be in a position to estimate the direction of the needle to the best advantage. Then grasp the needle by the hub with the thumb and index finger and insert it into the hole of the preliminary puncture and with a pill rolling motion and slight, tho firm pressure, the needle is cautiously *bored* thru the skin and ligaments. After you feel that the needle is thru the interspinous ligament, place the ulnar side of the hand on the patient's back and with an even steady pressure the needle can be pushed thru into the dural sac with the thumb and index finger.

In strong, robust, athletic people, the resistance to puncture is greater than in those who are gentlemen of leisure. Often we observe that, after the interspinous ligament has been punctured thru, the needle then passes for about half an inch thru soft tissue, after which a second obstruction is encountered which gives practically the same resistance to puncture as the interspinous ligament. Just thru this second obstruction the dural sac will be entered. Withdraw the obturator and wait for the appearance of the fluid in the hub of the needle, which will be five to ten seconds, if the pressure is normal.

OBTAINING THE PRESSURE READING

The apparatus required is an elbow adapter to fit the hub of the spinal puncture needle on one end to accommodate a glass tube at the other. The glass tube should have a small calibre, less than a millimeter, about one thirty-second of an inch, and should be about 450 mm. long (15 inches), with the end ground to fit the outlet of the elbow.

If the pressure reading is to be obtained, it should be done before any fluid is withdrawn. Connect the elbow with the hub of the needle and then the glass tube with the elbow and hold it perpendicular. The spinal fluid will be seen to rise in the tube, at first quite rapidly and then slowly. Request the patient to make a slight effort at coughing, merely a hack, and the rise of the fluid will be rapid again from this effort. It will go up and recede a little. When the column becomes stationary, stick an adhesive strip so that it will mark the height of the column of fluid. The height of the column can then be measured or read at leisure if the tube is graduated. A pressure of 90 to 150 mm. is normal, but it is possible to have a pressure of from 500 to 600 mm. This apparatus should be sterilized before it is used to prevent any possible contamination by having the fluid run back into the subdural sac out of the tubing or elbow.

DIFFERENCES IN THE SPINAL COLUMN

All spinal columns are not alike. The spinous processes in some are longer than in others. In some spines the spinous processes are wider and closer together than in others, so that the available space for puncture in the former is less than in the latter. Some spinous processes point straight backward, others backward and downward, and others backward and slightly upward. Some spinous processes will be found deflected laterally as much as half an inch, one to two centimetres.

DIFFERENCES IN THE MALE AND FEMALE

In the male the spinous processes are usually directed straight backward and are, as a rule, shorter than those found in the female of the same weight and build. Therefore, the direction of the needle in the male should be straight in, and the distance to puncture is less than in the female.

In the female the spinous processes are directed backward and downward, as a rule, and are longer than in the male of the same weight and build, so that the distance for puncture is greater in the female for two reasons, namely, the spinous processes are longer and the needle must be directed upward at an angle to conform with the spinous processes, therefore making the distance greater on this account.

WHEN THE NEEDLE HITS BONE

There is only one thing to do when the needle hits bone during the operation of lumbar puncture and that is to withdraw the needle entirely; at least out of the superspinous ligament and change its direction. The use of undue force in attempting to puncture bone will be disastrous with a needle of any size, especially with a small one. Under no circumstances should an attempt be made to change the direction of the needle while it is in the superspinous ligament, as the needle is sure to be bent and may be broken.

BLOODY TAPS AND DRY TAPS

It is a mathematical certainty that with a small round, sharp, pointed needle, blood taps will be fewer in number than when a large needle with a cutting end is used for lumbar puncture. In performing the operation with a small needle and with the patient under the influence of a local anesthetic, so there will be no pain and very little, if any discomfort, the operator can with greater ease make a number of attempts at puncture, providing it is required; while, if there is much pain and bitter complaining on the part of the patient during these unsuccessful attempts, the operator feels embarrassed to proceed further after two or three unlucky trials.

REPORT OF PUNCTURES AND HEADACHES

In this series puncture was performed 252 times and headache was observed 10 times minus, 4 per cent. Punctures were usually performed in the afternoon and the patients instructed to go home and lie down until bed time and retire early for the night. They were informed that they could arise at the usual time in the morning and go about their duties and experience no discomfort except a moderate stiffness of the back.

In three cases of women, who had headaches following puncture, two shopped for an hour before going home and then went home on the trolley car. One rode four miles on the trolley car, walked eight blocks, worked in the garden until time to prepare dinner, when the headache started.

One man walked home a half mile and sat around the house during the greater part of the afternoon and did not retire until late at night. His headache came on in the afternoon of the day following the puncture. One man left the office and cared for his store during the afternoon and part of the day following before the headache came on. He had a puncture by me on a previous occasion which was not followed by headache. In no instance did the headache in any of these cases last over seventy-two hours.

II.

THE CENTRAL NERVOUS SYSTEM AS THE APPARATUS PREEMINENT

The Creator's idea of the importance of the brain and nervous system is reflected in the protection afforded this apparatus. This system controls our every act and also all the chemical and physical changes of life. It has a governing influence over the rate and kind of respiration, the rapidity and character of the heart heat, the blood pressure, the desire for food, its digestion, absorption and elimination. By it we become cognizant of approaching danger and thru it we select our comforts and realize our gratifications. It is the prime mover of every process of life; hence the importance of its examination.

RELATIONS OF THE CENTRAL NERVOUS SYSTEM TO THE AUTONOMIC APPARATUS

Recent[2] studies have indicated that in the striped muscle there is a double system of innervation which so relates the autonomic apparatus (vegetative nervous system, smooth muscle and endocrine glands) and the cerebrospinal neuromuscular apparatus (the projection system) as to insure their working in harmony.

By this relation we may account for the fact that emotional factors are capable of producing acute as well as chronic structural alterations, organic diseases as well as functional diseases; while infectious organisms and organic disturbances operating thru the cerebrospinal system are able to create pathologic conditions and functional disturbances in the autonomic apparatus which affects the whole body.

By this relation we may understand how pathology in the central nervous system is capable of producing the gastric crises of tabes. An irritation or stimulation applied to a nerve at any place, at its beginning, along its course or at its termination produces pain or reaction only at its termination. Since the description of the syndrome of tabetic crises by Gull in 1858, and by Charcot in 1868, visceral crises of all the hollow organs of the body have been observed, even a crisis of the heart itself. These pains are reflex from an irritation in the central nervous system and their cause may be located by an examination of the spinal fluid.

NEED OF CEREBROSPINAL FLUID EXAMINATION AS A MEANS OF DIAGNOSIS

Having observed the major role played by the nervous system in all physiologic processes of life and in many pathologic conditions as well, does not the necessity of a careful examination of this apparatus become apparent? Especially is this true when there are symptoms chronic in nature and obscure in origin. Who can segregate the pain of reflex origin from that of local origin, when no local pathology can be demonstrated? It is not rare to find pathology in the central nervous system producing reflex pain in the abdomen, simulating local disturbances in the stomach, duodenum, gallbladder, appendix and other organs there and in the chest as well. By locating the cause of this disturbance an uneecessary and ill advised operation is avoided.

Unless pain and symptoms in a part can be accounted for by the demonstration of local pathology, the fact must not be overlooked that they can be of reflex origin from a lesion in the central nervous system, and the true cause may be discovered by an examination of the nervous system. No examination of the nervous system is complete without an examination of the cerebrospinal fluid.

Acute and chronic infections located in the subarachnoidean space can be definitely determined and diagnosed by an examination of the cerebrospinal fluid. This usually includes all infections, involving the brain and spinal cord which may be manifest by either local symptoms or by symptoms of a reflex nature located in the extremities, chest and abdomen.

An examination of the cerebrospinal fluid is indicated, when there is a new growth suspected in the central nervous system. Especially is this true when there is a new growth in the spinal cord. Definite information is available in conditions of this character by the combination of lumbar puncture and puncture of the cisterna magna, as was recently pointed out by Selling[3].

According to Hazen[4], "The examination of the cerebrospinal fluid is the most important part of the laboratory diagnosis and, when done by an expert, it is quite usual to be able to establish the diagnosis beyond question by this method alone. Lumbar puncture should be insisted upon . . . wherever there is the slightest suspician of central nervous system involvement. Under proper precaution the danger is infinitesimal, but there is a slight element of risk, and sudden death has followed the withdrawal of fluid from patients who have brain tumor or high blood pressure, so that, if these conditions be suspected, the greatest care must be exercised."

Caution should be observed, if there is a suspicion of new growth in the posterior fossa of the skull and only a small amount of fluid should be withdrawn very slowly by aspiration and under complete control of the operator, as hereinbefore described. In case untoward symptoms develop, the withdrawn fluid should be immediately replaced.

In tumors of the posterior fossa, where there is an urgent demand for an examination of the cerebrospinal fluid, Thompson[5] recommends the withdrawal of a very small quantity, not over 1 or 2 c.c. and this to be immediately replaced with sterile normal salt solution. The operator should proceed with great caution and deliberation in withdrawing cerebrospinal fluid, where the patient has advanced arteriosclerosis, or has an extreme heart condition. Any debilitated or weakened condition would of necessity demand caution.

Granted that there is a risk and that there is an occasional accident following lumbar puncture, for every *one* accident of this kind there are a hundred curable syphilitics turned loose uncured, to marry and infect innocent partners who become future parents of syphilitic offspring. *Who is responsible for these accidents?*

NEED OF CEREBROSPINAL FLUID EXAMINATIONS IN SYPHILITICS

According to Fordyce[6], "The problem of the future in neurosyphilis is one of prophylaxis. This can only be made real and solved by prolonged study of the infection. It is then that we may detect and anticipate by treatment incurable degenerations."

Treatment for syphilis should not be discontinued until the Wassermann reaction in the blood is negative. It is of greater importance to know that the cerebrospinal fluid is negative in every respect, chemically, cytologically and serologically, because within the dural sac is usually the last hiding place for the spirochete; and no patient is cured of his syphilis until the last spirochete in him is dead.

Attention is invited to an analysis of the punctures above referred to.

In this series of punctures there were a total of	238
Negative for syphilis in both blood and spinal fluid	102*
Positive serologically for syphilis	136
With both blood and spinal fluid positive 26%	36
With blood positive and spinal fluid negative 9%	12
With blood negative and spinal fluid positive 65%	88
Total	136

Total number showing evidence of infection in the central nervous system 91%=124.

The belief that a syphilitic infection does not reach the central nervous system in a majority of cases is erroneous. When the spirochetes are circulating thru the blood and lymph channels and are present in all the other organs and tissues of the body, is it possible for the brain and spinal cord to escape infection?

To rely upon the Wassermann reaction in the blood alone to rule out syphilis in this series of cases, there would be a failure nearly two times out of three.

Stokes and Brown[7] of the Mayo Clinic report 200 cases of syphilis, whose chief complaint was "stomach trouble". Out of this number 8 had syphilis of the stomach. The remaining 192 had a stomach trouble reflex in origin; 140 cases had a stomach trouble reflex from neurosyphilis; 70 per cent of this series had a negative blood Wassermann reaction and a positive spinal fluid. To rely on the blood Wassermann in this series of cases, the diagnosis and treatment would be wrong more than two times out of three. (This is one explanation for the growth and reputation of the Mayo Clinic.)

This reflex stomach trouble was described approximately seventy-five years ago and since that time much work has been done and liberal space has been given in the medical literature to the description of gastric crises and crises of the other viscera, together with the various manifestations of syphilis in general. Still this disease is habitually unknown in the practice of a great number of physicians.

Is there a conscientious physician who feels that he can, in the face of these findings, discontinue active treatment of syphilis, which usually means all treatment, until the spinal fluid has been examined and found negative?

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* The Wassermann test on all these spinal fluids was run with 0.5, 1.0, and 2.0 cc., using the cholesterol antigen with ice box incubation.

COMMON SENSE STANDARDIZATION VERSUS TRADITION AND ROUTINE IN THE SURGICAL CARE OF THE PATIENT *

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In the consideration of this subject in the preoperative, operative and postoperative care of the patient, it is not expected that we shall shed any brilliant scientific lustre upon it, but rather it is our desire to draw attention to, and bring out discussion upon, certain practical points that are many times overlooked; certain discarded methods which still have their adherents; and certain valuable new points which some surgeons refuse to accept.

The man who is doing a considerable amount of surgery is, as a rule, rather fixed in his plan of procedure and continues to carry on in accordance with his accustomed method, brushing aside any new suggestions or methods as being "irrelevant, incompetent and immaterial." But the man who only operates occasionally, and who does not classify himself as a surgeon, is more ready to accept innovations and to put aside discarded procedures. Confident that the surgeon will not consider our thoughts presumptive, and with the hope that the infrequent operator will find some helpful suggestions, we propose to deal briefly with the care of the patient from the time he enters the office until he has been operated upon and discharged from the hospital.

The first duty of the surgeon is, of course, the conservation of the health of the patient, and this all who do surgery attempt to accomplish; second, only in slight degree, should be the comfort of the patient during his illness; and, third, a very vital point, should be the conservation of the patient's finances. The man who operates should throw the same protection around his patient, and should adopt all the newer methods to insure a comfortable convalescence, that he would make use of for himself or for a member of his family. And he should also see to it that the average patient is put to the minimum of expense, both in time and money, in his illness.

In other words, here is a good opportunity to exemplify the golden rule of doing unto others as we would have others do unto us. Perhaps we encounter no greater opportunity to put into practice this lofty principle than when a trusting patient comes to us, confident that we will institute every measure which will safeguard his life, his comfort and even his finances. Just one of many examples we might use to show that this is not always done. Not long ago a surgeon, who always uses straight ether anesthesia, told me that his wife was to be operated upon the following day and when I inquired what anesthetic was to be used he replied that he was having Dr. —— give gas-oxygen ether. I do not blame him for this later, but does not his action indicate his belief in the greater comfort following this newer method of anesthesia, and are not his trusting patients entitled to exactly the same consideration? The surgeon who takes advantage of his patient to institute any measure that he can get by with, because it is convenient and inexpensive to him, is not doing right by his patient and is not doing his part in advancing medical science.

Surgery is supposed to be an exact science, and if it is, should it not then follow that the approaches to surgical procedure, the preparations therefor, the conduct in general during operation, and the method of conducting the patient through the processes of convalescence be exact also? If this be true, then how can it be possible that Dr. A. can follow a given procedure in every one of these particulars, while Dr. B. proceeds in exactly an opposite fashion and each one of them be right? Is there not some one best method which could be more or less universally accepted and followed as a standardized procedure, to govern us in the care of the patient thruout.

In a group of thirty surgeons the program of no two among them is very much the same in the care of the patient, and the differences are not altogether unimportant. They are many times so marked upon important matters as to lead the observer to determine that upon some of these points someone must be in error.

In the evolution of medicine there has gradually been developed the various specialties. Hospital standardization has of recent time come to us, and thru these media of specialization and standardization our methods of conduct in the hospital have come to be more or less identical the country over. For example, we have progressed so far in standardization that we have a standardized method and even a standardized time for scrubbing the hands; a standardized method of preparing the field of operation and other valuable standardized proceedings. Is it not peculiar, then, that we have no standardized procedure in the care of a given surgical case thruout? And why is this?

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* Read before King County Medical Society, Seattle, Wash. May 21, 1923.

The reasons are manifold, and the more important of these will be discussed, first, under differences in preoperative methods; second, operative; and, third, postoperative differences. It has not been possible to draw enlightenment from the literature that would exactly cover these points, and so I have inquired of the men in Seattle who do the greatest volume of surgery as to their methods, have interviewed twenty-four men and have found twenty-four more or less widely differing methods.

The method of one of these is so unique as to deserve special consideration. He first of all tells the patient that an operation has to be performed, then describes the operation in detail, so that the patient can understand it, after which he estimates the hospital expense. He next discusses his fee, tells him exactly what he is going to charge, following which, unless he knows his financial status, he dictates the amount which is to be paid down and the terms upon which the remainder is to be paid. (It is not known whether or not he secures a mortgage upon the body or the soul of his victim in case of failure on the part of the latter to carry out the terms of the contract.) In other words, he proceeds upon strictly business methods. Having settled the contract for the operation, he next discusses the anesthetic, describing the various forms of anesthesia and the effect of each.

In the preparation of the patient, sixteen restrict the diet, this restriction varying from a light diet for two or three days preceding entrance to the hospital, to a restriction only of the evening meal the day prior to operation. One man places the patient on half rations for a day or so, eliminating proteids but giving vegetables and carbohydrate diet. Another does practically the opposite, eliminating vegetables and carbohydrate food and giving eggs and light gruels, etc.

In the matter of attention to the bowels, three men give a laxative. One of these gives calomel from 1-10 to 3-10 grain in broken doses, followed by an aperient on the day preceding operation, a high compound enema at night. One gives an ounce of castor oil the day before the patient enters the hospital, and mineral oil the night before and the morning of operation. One gives a laxative (castor oil or citrate), if the operation is on the intestinal tract and not acute; also, if the case is one of suppuration in the pelvis, but no laxative is given for cases of hernia. Thirteen give an enema the night before operation and eight of these also give it the next morning, one being very particular that it is a salt solution enema. Two give laxatives the day before operation. Seven give no enema at night but give one the morning of operation. Two give no laxative and no enema, night or morning, provided the patient's bowels are in satisfactory condition.

Let us pause now and briefly discuss this quite varying method with regard to the bowels. And right here I wish to voice a very positive conviction that the so-called atention to the bowels is one of the greatest abuses of preparatory surgical procedure. It is the smoldering embers, the decadent relic of ancient days, when our forefathers in medicine, in preparing cases for operation, purged them violently for days, as if by so doing the system and perhaps even the soul became purified.

We are all more or less creatures of routine, and this routine has remained long with us, tho it is gradually being modified so that it is now much less harmful than in ancient time, and this lends hope to the thought that the time is not far distant when it will be relegated, with a lot of our former nonsensical procedures, to the scrap heap of the past.

How many of us would expect an athlete to be prepared for an athletic contest by a dose of castor oil and a high compound enema just prior to his ordeal? And yet we weaken and deplete our patients, and upset the intestinal tract, by such procedure, when they are to go thru a much more trying ordeal than any athletic contest. The war furnished overwhelming proof in emergency surgery (where there was no opportunity to prepare the patient), that so-called attention to the bowels was unnecessary, for the recovery of these patients was as tranquil as any of our prepared cases. Further proof to which we have given no attention is constantly before us in emergency cases which we encounter. Inquiry at the City Hospital reveals that no difference is noted in the convalescence of the emergency and the prepared cases.

Food restriction is of lesser importance, but I am not convinced that this is necessary or even advantageous as a rule. Four men instruct the patient to drink copiously of water for days before the operation. Six allow no water given ofter bedtime. One gives copious water with 2 dr. of soda bicarbonate.

One gives urotropin, 20 gr. t. i. d., for two days, if the urine shows any infection. Twenty give morphine before operation, the time varying from three-quarters of an hour before to immediately upon being put on the table. The amount ranges from one-eighth to one-fourth gr. Four give no morphine prior to operation. Twelve combine atropine with morphine, dose 1-120 to 1-150. Three combine scopolamine, dose 1-100 to 1-150 gr. One gives 30 gr. of bromide and 2 dr. of bicarbonate the night before and repeats this at 6 a. m. Two give veronal the night before.

The principal point which I wish to bring out in regard to the operative program itself is the method of anesthesia. Local anesthesia is now universally accepted as a proper procedure and should be used to a far greater degree than is customary generally at present. Hernias, goiters and many other operations can be done with absolute safety, and with very little, if any discomfort to the patient. Spinal anesthesia is also a standard procedure and should be used far more than it is at present, especially where there is any contraindication to a general anesthetic. It is just as safe in the ordinary case and far safer in certain heart, lung or kidney diseases, and cases of high blood pressure.

As to the general anesthesia six men give ether exclusively, four of these because their anesthetists use it. Two use it by preference, one declaring that he "does not like to operate in black blood," and the the other because he has had two deaths with gas-oxygen. Four use ethyl chloride induction followed by ether. Fourteen use some of the methods of gas-oxygen ether combination. Of these several methods all declare they have little nausea and vomiting and little postoperative distention. However, all authorities agree that there is far less postoperative distress from nausea, vomiting or distention, following gas-ogygen ether combination; that it is absolutely safe in the hands of an expert, and that relaxation is just as good as with straight ether. Here again, therefore, we are unnecessarily punishing our patients with the distressing after effects of drowning by ether, instead of accepting this new method which gives the patient an infinitely more comfortable convalescence.

Gastric lavage on the operating table is practiced by two, and I wish to lay stress upon this as an important procedure which is generally overlooked. The patient has swallowed much mucus and saliva, and many times considerable quantities of bile have been regurgitated into the stomach, leaving a residue which is easily, and I think always should be cleaned out. This is best accomplished by introducing the stomach tube thru the nose—a very easy procedure, then the stomach should be washed until the solution comes away clear. It is my custom to do this and to instil thru the tube, and leave in the stomach about 8 ounces of soda bicarbonate, or salt solution.

In the postoperative care practically all give morphine for the pain, but it is surprising how little some require. One man gives one-fourth gr. on the operating table, and then one more dose as required he claims is usually sufficient. One gives one-sixteenth every hour for the first day, rarely using more. Three give one-fourth gr. p.r.n. Two give one-fourth gr. every four hours for four doses, then p.r.n.

Seventeen allow sips of hot water when stomach is settled. Three allow a glass of water when the stomach settles. Seventeen use proctoclysis. Four instil glucose or saline solution, four to six ounces every four to six hours. One instils two quarts saline solution on the table, "as an internal hot water bottle," and elevates the foot of the bed so that adhesions, if they occur, will not appear in abnormal positions of the bowel. Practically all allow liquid diet when the stomach is settled, soft diet when the bowels have moved. All claim to have very little neausea and vomiting. When present, and if persistent, it is practically uniformily treated by lavage. Otherwise by the simple methods, as Vichy, peppermint water, etc.

Two do not urge food but rather discourage it on account of toxicity of the patient after operation. One of these gives light diet for a week to ten days. The bowels are opened the second to fourth day with one exception. This man waits four to six days without giving anything, and states that the bowels then usually move of their own accord (and I should think they would).

The methods used in opening the bowel vary about as widely as the north pole and the equator. Two men use one-tenth gr. calomel every hour for ten doses, one beginning eight hours after operation, the other four hours and follow by mag. sulph. Six use mag. sulph. by mouth in varying amounts. Six use castor oil in varying amounts, from one to two ounces. One man instils saturated solution of mag. sulph. in bowel slowly on the third day, six to twelve hours thereafter giving high compound enema. Two men use saturated solution mag. sulph. two ounces, end of second or third day and repeat as required. One uses blue mass pill, one-fourth gr. t.i.d. for three days, beginning after operation.

In treating distention one man gives mag. sulph. by mouth in divided doses. Another gives an enema containing one ounce of glycerine or milk of asafetida, eight ounces, and allows nothing by mouth until the distention disappears. Still another gives molasses enema and eserin. Two use hot turpentine stupes with the other customary procedures. Four use pituitrin sparingly. Two use it liberally, one-half ampule repeated every two hours for four doses, followed by high compound enema. Three are altogether opposed to pituitrin at all, declaring that it has little if any effect, and is dangerous. The others all resort to the routine—enema, rectal tube, etc.

The time for the removal of retention stitches varies from the sixth to the fourteenth day. Skin stitches from the fourth to fourteenth day. Some remove the skin stitches early and the retention stitches late, while others remove retention stitches early (sixth to seventh day), and the skin stitches or clips the twelfth or fourteenth day. The time in the hospital for any ordinary laparotomy ranges from ten days to three weeks.

Concerning this varying scale of procedure in the postoperative attention to the patient, I shall discuss just two points, upon which I have a very definite and positive conviction, viz., the time of removal of stitches and the length of time patients are made to remain in the hospital. Upon the other points I have no fixed opinion.

I see no reason for leaving stitches in until after the patient should be at home attending to her household duties or engaged in some social function. Unless she has a low hemoglobin, or in case of recent jaundice, as in gallbladder conditions, the tissues heal readily and are so solid that they will not break open after the seventh day.

I have for eight years pursued the following method with regard to stitches. Skin clips are removed on the morning of the fourth day. This gives an opportunity to inspect the wound, and besides we know it cannot break open with the retention stitches left in place. The retention stitches are removed on the sixth or seventh day, the patient being allowed on a back rest by this time, out of bed on the eighth day (as a rule) and most generally home on the ninth day, seldom later than the tenth.

The reasons for this procedure are, first, that it gets the patient up and home from the hospital early, and this is a vital point to the majority of patients, because the hospital expense is heavy for them and it is our duty to safeguard their pocketbooks. The second reason is that early removal of stitches makes a neater scar, an important matter in view of the constant change of style in female attire, for who knows but that Madame Fashion will soon present our patients before the public gaze with our scars plainly visible.

SUMMARY AND CONCLUSIONS

I wish to lay special emphasis upon the following points.

1. More consideration should be given the patient, first, as to comfortable convalescence; and, second, a minimum hospitalization.

2. The facts presented concerning the widely varying scale of methods of conduct of a surgical case seems to argue for a greater uniformity, a standardization of procedure.

3. Food restriction prior to operation is rarely indicated or necessary.

4. Such depressent drugs as choral and bromides should never be given at a time when the patient needs every ounce of strength possible, and the use of such drugs greatly lowers the vitality.

5. The so-called attention to the bowels should be practically forgotten, it being only necessary to ascertain that they are functioning regularly.

6. We should be prompt to accept modern methods of anesthesia and encourage special training in this art, because it is proven to be safe in competent hands, and the authorities are unanimous concerning the comparatively greater comfort in postoperative convalescence.

7. Both local and spinal anesthesia should be given more generally than at present, and especially where a general anesthetic is in any degree contraindicated.

8. Gastric lavage on the operating table is easily accomplished by induction of the stomach tube thru the nose, and it removes a cause of nausea and vomiting.

9. Morphine is a stimulant and a comfort and should be administered to the patient unstintingly.

10. Water should be given freely in correspondence to the patient's demands, because it does not increase vomiting, it serves as a gastric lavage, and does no harm to the patient.

11. The Murphy drip is a source of constant annoyance and irritation to the patient, its efficacy is many times questionable and a better method is by instillation of 6 oz. every six hours.

12. Early removal of stitches is not contraindicated in the average case; such procedure gives a nicer scar, and best of all gets the patient out of the hospital early.

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EDITORIAL

THE ETIOLOGY OF PERNICIOUS ANEMIA

The growing tendency of investigators and clinicians to regard this disease as of infectious origin is well known. Because of the intimate relationship between gastrointestinal disorders, various investigators have sought the seat of infection in this tract but with nothing in the way of definite results. Infections of the teeth have been regarded as a possible fruitful source of research but none of the results have been satisfying. Tonsillar infections have at all times seemed less likely as etiologic factors, and investigations in that direction have also been unsatisfying. Infections of the gastric mucosa, leading to its atrophy, have also been mentioned but the consensus of opinion is that this is an associated condition rather than an etiologic factor.

Recently[1] there was presented to the Inland Empire Medical Association, in Colfax, Wash., an original communication[2] which may possibly resolve the question of the etiology of pernicious anemia into that of certain types of gallbladder infection. A series of borderline anemia cases, i.e., cases in which the persistent characteristics of pernicious anemia are present but without megaloblastic cells being found in the circulation, and cases of frank progressive pernicious anemia were reported. Some of the cases had been studied at operation, others at autopsy. The presence of microorganisms in scar tissue areas lying within the muscular coats of the gallbladder wall was demonstrated in each one. The presence of a diseased gallbladder was demonstrated roentgenologically in each patient studied clinically during life. At operation in three patients and also in several cases studied at autopsy the macroscopic changes in the gallbladder were so slight that disease of this organ could easily have been overlooked. It is noteworthy that shadows of such diseased gallbladders may be obtained on x-ray films.

Of six patients operated on one has been free from signs of pernicious anemia for six years. One patient operated on ten months ago has regained very nearly a normal blood picture. The response to cholecystectomy in the six patients has been more rapid than from any other procedure studied by the authors. The suggestion is offered that the removal of the infected gallbladder in pernicious anemia may at times break a vicious circle of infection which is maintained from this organ as a focal site by microorganisms possessing special characters, and that the long continued hemolysis may be produced either by the direct lytic action of the bacteria and their products on the red blood cells or by the effect of some chemical substance entering the circulation from the infected gallbladder.

In the past the literature has frequently contained allusions to the possible candidacy of all cases of achylia gastrica for the development of pernicious anemia. Since the recent literature has so frequently mentioned the association of achylia gastrica with chronic cholecystitis, it would seem that one might look upon the sequence of events as chronic cholecystitis, inducing an achylia gastrica, then to be followed by pernicious anemia. It is to be hoped that this paper will be published early and will stimulate others to study their cases of infections of the gallbladder, so that possibly cases of pernicious anemia may be forestalled by surgical intervention.

F. E.

PASTEURIZATION OF MILK

Every community has a right to protection from such diseases as may be transmitted thru its food supply, and this protection must come thru the exercise of authority that is given by law to health officers. That authority in Washington especially is very broad, and broad and efficient in many other states.

No article of food requires such close scientific supervision in its production as milk. The reason for this is quite obvious and should require no explanation to physicians. Unfortunately, however, many of our profession are very negligent in giving this matter the serious thought to which it is entitled. At any and all times this menace of contamination exists. The danger could be reduced to a minimum, if all milk could be produced under certified rules. This would be quite impossible, as the milk comes from hundreds of dairies, spread out over hundreds of miles of territory, and no force of inspection would be adequate to cover the entire field, and it would raise the cost of production to such a point that the price of milk would be prohibitive to people of the poorer class. Aside from this argument, as was illustrated in Portland a little over a year ago, the most careful and painstaking dairy can cause the most serious trouble. In other words, it is the kind of bacteria and not the number that tells the story in the end, and what occurred in Portland has taken place in other cities from milk that was actually certified.

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[1] May 23, 1923.

[2] Infection of the Gallbladder in Relation to Pernicious Anemia. By Drs. N. W. Jones and T. M. Joyce, Portland, Ore.

Pasteurization solves the problem in the most satisfactory way and destroys all pathogenic organisms without in any way disturbing the food value of the milk. There is only one kind of proper pasteurization and that is performed in vats by heating the milk to 145 degrees and holding it at this temperature for thirty minutes. If so done, all pathogenic organisms will be killed, and as stated, the milk still preserves its entire food value and is not injured in any way. It should then be immediately cooled to 40 degrees, as all know, after it has been placed in sterile bottles. In this plant are employed a few men, who can easily be carefully inspected and examined. By the old method many people participate in the collection and production, and personal inspection is absolutely impossible, excepting in cases of here and there a certified dairy.

Anyone without selfish interests would not think for a moment of opposing pasteurization, when he is assured that it practically insures safety. To say that tuberculin testing and clean production will do the same is not backed by results. Tuberculin testing only guards against bovine tuberculosis and has nothing to do with the human type that may be transferred to the milk by tuberculous employes; and the cleanest dairy in the world may cause an epidemic of disease, if its milk is not pasteurized.

The New York State Department of Health reports in its last bulletin the following statistical figures of outbreaks of transmissible disease, occurring in that state during the years 1917 to 1921 inclusive, from contaminated milk. They are as follows: Eighteen outbreaks of typhoid fever, 380 cases and 23 deaths; one outbreak of diphtheria, 70 cases and 7 deaths; one outbreak of scarlet fever, 24 cases and 1 death. A total of twenty outbreaks, 474 cases and 31 deaths. And it is stated that not a single one occurred from pasteurized milk.

Just a word about increasing the price and forcing the raw milk man out of business. This is bunk, pure and simple. At the present time 85 per cent of Seattle's milk supply is pasteurized. No price increase has resulted from pasteurization and no one has been forced out of business. We might as well allow people to drink polluted city water because they object to the method of purification. With a safe insurance for pure milk it is nothing less than criminal to go on killing people with the other kind. H. M. R.

ETHICS OF THE OPERATING ROOM

As a class medical men are noted for their thoughtfulness and courtesy. They worship the ideal and work for its accomplishment. Numerous books on medical ethics attest the universal desire to standardize professional conduct and leave to no one the excuse of ignorance of the unwritten law. Why is it, then, that more laxity in behavior is observed in the private operating rooms of our hospitals than in other departments of our work. Do we realize that the private operating room should be scarcely more accessible than the surgeon's consultation room during the examination of his patient? It apparently does not occur to us that the patient's unconsciousness is no reason why our privileges should not be restricted, and that even where local anesthesia is being used the patient's sensibilities are no less acute.

The favors extended to visiting physicians vary greatly in different surgical centers, the greatest liberty being permitted at the larger clinics. But in the smaller hospitals, where operations are performed on private patients by numbers of surgeons, the visitor frequently assumes privileges thru the silent consent of professional courtesy. Other surgeons, killing time before or after operations of their own, not infrequently embarrass an operator by their unexpected presence; and medical friends contribute not occasionally to this embarrassment by their thoughtlessness of conduct. How often, for instance, do we see the anesthetist distracted from his work by questions or irrelevant conversation carried on by those not engaged in the operation; or the operator disturbed by their approaching too closely the aseptic area of the operation. If unmasked they are a distinct menace to asepsis, with their tiny droplets of projected saliva when laughing or talking. How pleasant it is in the atmosphere of surgical work to entertain the guest, who has first requested permission or consulted with the head nurse before assuming the right of admission, to find him properly gowned and masked, to see him stand out of the way of nurses and others who are working there, to notice his unobtrusiveness in conversation and his evident thoughtfulness of the surgeon's responsibilities and trials.

The burden of responsibility ever falls upon the shoulders of the surgeon and, as the operation is primarily for the patient's welfare, no detail connected with its performance is too small for his consideration. Even during the wash-up his mind is occupied with questions of the thoroness of preparation of nurses and assistants, with details of the anesthesia, with plans for the actual operation, and with the everpresent bearing of its success or failure upon his own welfare. How often, then, is he districted by tediously related stories of personal experiences of assistants or other physicians. How often have we heard the lyric outbursts or light hearted conversation of the anesthetist during the operation, or the elephantine jocosities and attenuated witticisms of the casual visitor. Certainly the operating room is no place for levity during the performance of a major operation. Concentration on his task is demanded of every surgeon. He should at least give it that amount which he employs when addressing his golf ball on the first tee. It is not at all necessary that he dispense with good humor, nor can he be crusty and pernickety under the guise of concentration. He should, however, have sole title to dictate the topic of conversation, the exercise of which right, by the way, would avoid many tiresome questions on time worn points of theory and technic.

The unwritten law of good form in the matter of discussion and criticism extends beyond the operating room, and as guests at a private operation good taste alone prohibits disparaging comment. Assistants are similarly bound to regard as confidential any untoward happening of whatever nature which might reflect upon the operator. Certainly nothing gains one less in the mind of the listener than to express an insinuation about one whose hospitality he has just accepted. The ethics of the operating room should be no less rigid than ethics elsewhere.

If we might be permitted to formulate a list of "ten commandments" for the surgery, the following would be our choice:

1. Be assured that you are free from colds and infectious diseases before coming on the operating floor.

2. Send in your name or consult the head nurse before entering to view a private operation.

3. Conform to the hospital's custom in the matter of gown and cap.

4. Be unobtrusive in your conversation and leave room for those who are doing the operation.

5. If possible, wait until the operation is completed and, if convenient, thank the surgeon for his courtesy.

6. Be generous in your remarks and avoid disparaging comment.

7. Remember that case reports and other records of patients are always private.

8. Be punctual, if accepting an invitation to view an operation.

9. Cultivate the spirit of dignity and thoughtfulness and avoid levity.

10. "Noli loqui; noli tangere."

A GREAT MEETING IN SEATTLE

When the program of speakers was announced for the second annual meeting of the Pacific Northwest Medical Association, which was held in Seattle last month, there was skepticism on the part of some regarding the fulfillment of such an ambitious enterprise as the committee had planned. The reality, however, fully met the expectations which were hoped for. The assembly of distinguished members of the profession from many parts of the country provided a program of addresses and papers surpassing any previous effort of like nature in this part of the country. The interest in the meeting was shown by the registration of some 500 physicians from the states of the Pacific Northwest and the Canadian provinces. It was notable that the attendance at the gatherings during the period of three days continued as large at the end as at the beginning. It was a new feature in this section of the country to hold sectional meetings coincident with each other. The attractions of each, however, were of such nature that large audiences were assembled for each gathering. While it was impossible to hold all sections under the same roof, they were scheduled in sufficiently close proximity so that the distance between was not burdensome.

While every speaker had his own attractive characteristic and all the papers were of special interest and value, space forbids a detailed description of all. The daily morning lecturers attracted the largest audiences and their personalities made a lasting impression on their hearers. Dr. Carlson, of Chicago, possesses a fund of dry humor which constantly fixes the attention of his hearers. His lectures reflected the investigations of an authoritative student and presented the work of a master mind. The theory on cancer presented by Dr. Wells was of such a convincing nature that one is almost inclined to believe in its hereditary origin and to question whether the solution of this elusive problem is to be attained by laboratory investigations. His demonstration of the hereditary principles determined in the transmission of cancer in mice is a most suggestive possibility as to a similar factor in the etiology in this disease in man. Prof. Wenckebach made a most pleasing impression upon his hearers. His own history and his attractive personality endeared him to all who made his acquaintance. It was great pleasure to have as a guest so distinguished a representative of the medical profession of Vienna as a lecturer at this meeting. The scheme for the meeting did not contemplate official social functions, its main purpose being for scientific promotion, and the only general gathering was a dinner on the final evening. Numerous private dinners were given, however, which provided opportunities for social contact. Great credit is due to the committee whose laborious efforts made possible this great meeting. Such a final result demands long previous planning and endless drudgery and cooperation of the few enthusiasts whose efforts are slightly known to the profession at large.

It was determined by the committee that it would not be desirable to repeat the experience of a year ago, when an official stenographer was engaged to report all the lectures delivered at the Spokane meeting, for the purpose of subsequent publication in Northwest Medicine. The expense was excessive and the final result was far from satisfactory. A certain number of papers are now on hand which were read at this Seattle meeting, which will be published in future issues of this journal. Certain of the lecturers have promised to provide written papers of their addresses, which will be included with those already received. It is hoped that quite a number of these may be later presented to our readers for a permanent record. No effort was made at this time to record the lectures which were delivered. An attempt to publish such a report unless from the hands of an experienced stenographer is a mere pretense. No reporter, either lay or medical, is able to make such a report of any value whatever, either from a standpoint of accuracy or of scientific interest.

The meetings of this Pacific Northwest Medical Association of the past two years have established a precedent which will make a distinguished record, if continued in the same character during subsequent years. It was voted that the next meeting will be held in Vancouver, B. C. The medical profession of the Northwest ought to get better acquainted with the brethren across the line. This will be a fitting opportunity for them to come in friendly contact with large numbers of the profession in the adjacent Canadian provinces.

THE A. M. A. MEETING IN SAN FRANCISCO

The meeting of the A. M. A. in San Francisco last month was in some respects the greatest meeting that the organization has held in the West. This fact was attested by the record breaking attendance. The registration approximated 3700, which exceeds by 1200 that of any meeting ever held on the Pacific Coast, and challenges the attendance of any meeting in the West. The profession of the Northwest participated liberally in this large registration. The records showed 124 attendants from Oregon, 100 from Washington, 25 from Idaho, 51 from Utah and 15 from Montana. These visitors represented all of the cities and towns of their respective states. Weather conditions seemed to have been prepared especially for this occasion. There was neither fog, cold nor heat. Visiting motorists could not have demanded pleasanter conditions for traveling thru the great state of California.

San Francisco is an ideal convention city. The wealth of hotels provides accommodations for the throngs that assemble on such an occasion. The imposing auditorium at the beautiful civic center provides complete accommodations for such a gathering. The capacious hall in the center gives abundant space for the numerous commercial exhibits without trespassing on each other's territory, while the booths for registration, information and other purposes are well provided, and leave sufficient space for general assembling and visiting. The two large halls, one on each side, furnish abundance of seating accommodations for any number of attendants at the general medical and surgical sessions, while numerous smaller halls are provided for all other sections. The assembling of all the features of such a great convention under one roof is unique among the cities of the country.

The program for the meeting presented numerous papers in the various sections, into which the association meetings are always divided. Description or even mention of individual papers is not opportune in a report of this character. The interest in all of the program was demonstrated by the large attendance at each section. Apparently specialists in all branches of medicine, as well as general practitioners, were well represented among the visitors. The largest attendance was naturally assembled at the general meeting of the first evening, when addresses were given by the outgoing and incoming presidents, with others of welcome from California and San Francisco officials. The largest available auditorium in the city was filled to capacity. The new president, Dr. Wilbur, of Stanford University, made a most favorable impression. He presents the voice and delivery of the trained orator and every word was heard by the whole immense audience, a feature which is unfortunately rarely observed in the addresses of medical men. The new president demonstrated by his masterly address that he is fully alive to the present day problems of the medical profession and his relation with the general public, altho he himself is not connected with the personal practice of medicine.

The hospital clinics which featured the two days preceding the regular meeting were satisfactorily patronized by visitors. The profession of San Francisco demonstrated their position among the leaders of the profession in their clinic presentations of cases in their numerous hospitals. The social features of the meeting received abundant attention. Beside the official president's reception, there were numerous meetings and dinners of college alumni, fraternities and private parties. This annual meeting provides a great opportunity for members of the profession to meet friends and acquaintances from all parts of the country. While the scientific side of this meeting is in no respect to be slighted or overlooked, perhaps even more profit is derived from the opportunities of personal contact and the renewing of old friendships. Every physician owes it to himself to attend these great meetings whenever circumstances permit. It was a source of congratulation that the profession of the Pacific Coast was so much alive to the opportunity at this time.

THE IDAHO FALLS MEETING

The thirty-first Annual Meeting of the Idaho State Medical Association was held at Idaho Falls, June 13-14, in the Elks Club Rooms. Dr. John R. Gray, President of the association, journeyed from his present home in Oakland, Calif., to preside. Idaho may be considered fortunate in having had such a splendid presiding officer, who conducted the entire meeting with remarkable ability. Irish humor coupled with excellent chairmanship put snap into every hour of the meeting. The papers were read by men outside of the state, with the exceptions of Drs. Charles R. Scott of Twin Falls and Ed. E. Maxey and Arthur C. Jones of Boise. Visitors on the program were Drs. J. E. Rush of New York, P. V. von Phul of Seattle, B. H. Orndoff of Chicago, W. C. MacCarty of Mayo Clinic, E. A. Graham of St. Louis and A. J. Carlson of Chicago.

The entertainment committee, of which Dr. C. M. Cline was chairman, could not have done better in providing not only the usual banquet, smoker and the entertainment of visiting ladies, but also in arranging a trip thru Yellowstone Park for all visitors as the guests of the State Association. This trip was a most unusual as well as delightful three day outing, when the park could be viewed emerging from its winter's sleep. About eighty members were in attendance, which speaks most highly of their enthusiasm, when one reflects that some had to journey over 800 miles thru two other states to get to Idaho Falls.

DISTRICT MEETINGS OF THE AMERICAN COLLEGE OF SURGEONS

The district meeting of the American College of Surgeons for next fall will be held in Portland, September 24-25, for the members from Oregon and Idaho. Clinics will be held at the different hospitals of the city and a public meeting will be scheduled for the evening of the 24th. Plans are being arranged to make this a great meeting for the citizens of the city, at which time facts concerning the medical profession and its relation to the general public will be presented. It is aimed to explain the development and growth of modern cults and the deceptions which are propagated by them. The section representing Washington and British Columbia will meet in Victoria, September 18-19. Programs similar to that in Portland will be scheduled for this meeting.

ERRORS IN MAILING LISTS

During recent months frequent complaints have been received from physicians in the states represented by this journal that they have failed to receive their copies, and they generally feel somewhat disturbed from being apparently ignored or neglected in this manner. Investigation has demonstrated that the difficulty can be assigned to one of three causes. In the first place, it should be remembered that the mailing lists from the different associations are received from the several secretaries. The most common explanation for the incorrect address is removal from one location to another, and the change of address has not been sent to the association secretary nor to this journal. Sometimes the individual has gone as long as a year or more before the changed address has been received. The second cause for the difficulty is lack of coordination between the secretary of the county society and that of the state association, thru whom the correct addresses are received. It is frequently discovered that the name of a subscriber has been cut off by the state secretary in consequence of failure to pay dues. The subscriber may express indignation that he has been neglected for many months, while he has overlooked the fact that membership in the association is contingent upon payment of society dues. The third source of error is an oversight which at times occurs in the business office of every magazine, where for some reason an address is overlooked and the error is not discovered. The whole difficulty, however, can be easily remedied in each instance, if those who fail to receive the journal each month will promptly write a note to Northwest Medicine to that effect. The matter will receive immediate attention and the cause of the trouble will be at once ascertained and adjusted.

MEDICAL NOTES

OREGON

New Organization of Health Officers. The county and city health officers of Oregon organized an Oregon State Health Officers Association at Portland last month. Dr. George Parrish, city health officer of Portland, was elected president, and Dr. F. B. Stricker, state health officer, was elected county secretary.

New Medical Graduates. At the commencement of the University of Oregon last month, twenty-six doctors received their medical degrees. Most of the graduates are from Oregon, but include representatives from Washington, California, Iowa and Wisconsin.

Reminiscences of Half Century. At a meeting and banquet of the Lane County Medical Society, on June 16, Dr. T. W. Harris, of Eugene, gave reminiscences of fifty-one years of medical practice. He recited some interesting contrasts between the practice of half a century ago and the present day. He appealed for the development of the altruistic and unselfish attitude as an advantageous philosophy of life and a benefit to the medical profession as a whole.

Elected to Two Associations. Dr. Ralph A. Fenton, of the faculty of the University of Oregon Medical School, has been elected Associate Fellow of the American Laryngological Association, and also made a member of the American Laryngological-Rhinological-Otological Society.

Resigns from Office. Dr. W. E. Hempstead, of Oregon City, has resigned as county health officer. His successor has not yet been appointed. The county judge favors combining the positions of county physician and county health officer.

Woman Physician Home Again. Dr. Esther Lovejoy, a former well known practitioner of Portland, has returned to America. A few weeks ago she was personally decorated by the King of Greece with the first Greek War Cross ever awarded a woman.

Dr. F. A. Lieuallen, of Pentleton, has moved to Bend, where he will establish practice.

Medical Wedding. Dr. George V. Vandevert, of Bend, was married June 26, to Miss Marie Paulsen, of Astoria.

WASHINGTON

State Board of Health Meeting. The Washington State Board of Health held its summer meeting at Spokane, June 12. The members of the Board are Drs. R. E. Elvines, Spokane; Paul A. Turner, Seattle; J. H. Eagan, Tacoma; Herbert Leiser, Vancouver; W. W. Brand, Yakima and C. E. Dorisey, secretary.

Medical Licenses Granted. At the medical examination held at Olympia, June 19, the following were licensed by examination to practice: R. Freeman, M. F. LaViolette, C. J. Simon, K. Ohnesorg, F. P. McNamee, H. J. Flower, of Seattle; S. C. Jones, Port Townsend; E. F. Mullaly, Bremerton; J. Sandlands, Victoria, B. C., and A. W. Matschke, Fresno, Calif. The following physicians were licensed by reciprocity: C. E. Allen, Vallejo, Calif.; C. A. Anderson, J. S. Bell, Seattle; I. S. Benson, Willmar, Minn.; A. E. Bird, Amity, Ore.; E. L. Clough, Pickering, La.; D. H. Dale, Lusk, Wyo.; J. C. DeWane, Wolf Point, Mont.; W. J. Garard, Chicago; J. B. Gillis, Milton, Ore.; M. C. Hurd, Hemingford, Nebr.; C. Jay, Morenci, Ariz.; A. E. Lang, Rochester, Minn.; W. P. Lane, Gary, Ind.; C. E. Leedy, Pierceton, Ind.; G. A. Larson, Hayward, Wis.; F. C. Leytze, New York City; W. H. Lott, McMinnville, Ore.; O. M. Nisbet, Walla Walla, Wash.; J. L. Norris, Lusk, Wyo.; R. L. Rotchford, Cleveland, O.; E. E. Sparr, Kansas City, Mo.; H. Takacs, Warm Springs, Mont.; F. G. Wendell, Sandpoint, Ida.; J. P. Weber, Worland, Wyo.; A. W. Wilson, Seattle, and R. D. Wright, Belgrade, Mont.

Officers Elected by Nurses. At the meeting of the Northwest Division of the American Nurses Association, held at Tacoma, June 9, Miss Mae S. Loomis, of Seattle, was elected president; Miss Barbara Williams, vice-president Idaho State Nurses Association, was elected vice-president; Mrs. Elizabeth Soule, head of the Department of Public Health Nursing, University of Washington, secretary.

Nurses Licensed to Practice. As a result of examination held June 5, in Seattle and Spokane by the State License Department, one hundred graduate nurses received licenses by examination and twelve others were licensed by waiver.

Isolation Hospital Discussed. The city council of Colville held a meeting June 8 to discuss a plan for an isolation hospital. It was proposed that the county and city should cooperate in the building of such a hospital for contagious diseases.

New Staff of County Hospital. The county commissioners of Pierce county voted last month to establish a non-salaried staff of physicians and surgeons at the County Hospital, which will displace the present office of county physician and his assistant. This decision will retire Dr. C. P. Gannon, who has been county physician for some time.

Hospital to be Enlarged. The Northern Pacific R. R. Hospital at Tacoma is to be remodeled and enlarged and modernized in many ways. A contract for $135,000 has been awarded for this work which will be started at once.

Hospital Bids Opened. Bids have been received for the construction of a hospital for The Sisters of Charity of the House of Providence, which is to be erected at Everett, at a proposed cost of $300,000. It will be four stories in height, of concrete and brick construction.

New Hospital at Centralia to be Opened. It has been announced that the Centralia General Hospital will soon be opened. It will be under the supervision of a group of well known physicians of that city. Plans for a thirty-five bed hospital in a new modern building are being made, the location of which will soon be announced.

Equipped as Hospital. The Community Center at Kent is equipped as an emergency hospital with two beds, a trained nurse and a loan closet. Its purpose is to act as an emergency hospital.

Superintendent of Hospital. Miss Mary Buob has been elected superintendent of the Spokane Deaconess Hospital. She is a graduate of the hospital and for some time has been acting superintendent.

Hospital to be Established. Dr. J. L. Morris, recently from Lusk, Wyo., has arrived at Kelso, where he contemplates establishing a hospital at the new city of Longview. The hospital will be temporarily located in a business block.

Washington Antituberculosis Association held its annual meeting at Spokane, June 12. Mrs. R. C. McCreadie, of Sunnyside was elected president. Drs. C. H. Quevli of Tacoma, and H. S. Brodie, of Walla Walla, were elected vice-presidents.

Grays Harbor County Medical Society held a special meeting at Aberdeen in the Grill Room of the Washington Hotel, June 6. The meeting was called to order by Pres. O. R. Austin. Minutes of the previous meeting were read and approved. Mr. Robert O. Jones, of Seattle, executive secretary of the Public Health League of Washington, addressed the society on the work of that organization. A buffet supper was served.

Tricounty Meeting. The annual tricounty meeting of physicians of Snohomish, Skagit and Whatcom counties was held at Mt. Vernon, June 14. The organization meets every three months at Mt. Vernon, as it is situated between the other counties. A program of papers were presented, followed by a banquet.

Receives High Degree. Dr. H. V. Wurdemann, of Seattle, on June 6, received the degree of Doctor of Science, honoris causa, from George Washington University, of Washington, D. C. This honor was conferred because of contributions to both medicine and science.

IDAHO

Hospital to be Completed. The committee in charge of building the Latter Day Saint's Hospital at Idaho Falls announces that it will be completed and ready for use by the middle of September. Altho the institution will be built chiefly thru the efforts of the Mormon church, it will be open for the use of all qualified and honorable practitioners.

Hospital to be Sold. The Bethany Deaconess Hospital, at American Falls, will be sold to the government, according to the vote of the stockholders at its annual meeting, June 6. The government offered to purchase the institution for the sum of $19,000.

Idaho Conference Combined. The North Idaho Conference of the Idaho Antituberculosis Association, which was to take place at Coeur d'Alene on June 9, was combined with the meeting of the Washington Antituberculosis League in Spokane, June 11-12.

Appointed Medical Director. Dr. J. H. Einhouse, of Moscow, has been appointed medical director in charge of vocational men in training at the University of Idaho, succeeding Dr. D. B. Harvison, who has moved to Pascoe, Wash.

South Side Medical Society held a special meeting at Twin Falls, June 11. Dr. P. V. von Phul of Seattle, was the guest of the society and read a paper on The Heart and Goiter. Dinner was served previous to the meeting of the society.

Canyon City Medical Association met at Caldwell, June 7, for the last meeting of the session. Papers were read, followed by a dinner.

Dr. W. T. Seeley, who has practiced for some years at Leland, has moved to Kendrick, where he will resume practice.

City Physician Selected. Dr. W. D. Madden, of Pocatello, was recently elected city physician by the council.

Dr. Edward Getzlaff, of Los Angeles, has located at Priest River.

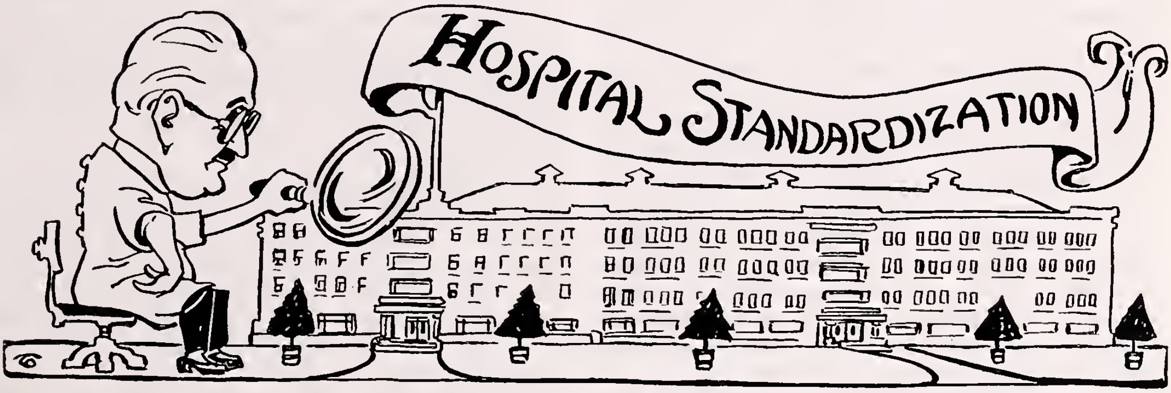
OBITUARIES

Dr. George W. Libby died at Spokane, Wash., June 6. For many years he had diabetes. During recent months he experienced a striking improvement from the administration of insulin. He was born in 1850 at Hiram, Me. His boyhood was spent upon a farm. He graduated from Kents Hill Seminary in 1872 and began to study medicine under Dr. W. B. Cobb, of Standish. For a time he studied at Howard Medical College and graduated from the medical department of Bowdoin College in 1876. He practiced in Scarsport, Me., and Middletown, Conn. He moved to Spokane in 1884. He was a charter member of Spokane County Medical Society and the State Medical Association, of which he was president in 1906. He was one of the founders of the Deaconess Hospital and performed the first operation in that institution. He was continuously on its staff. He frequently lectured to the nurses and also delivered the diplomas to the graduates, the last occasion being five days before his death. He was held in high esteem by all the members of the medical profession and occupied a prominent position in civic and charitable affairs.

Dr. Alfred E. Goldsmith died in Tacoma, Wash., June 22, from disease of the heart. He was 68 years of age. He was born at Rochester, N. Y., afterward moving to Toronto. He practiced medicine in Greenfield, O. Twelve years ago he came to Tacoma after practicing for four years in Puyallup.

Dr. Lewis J. Perkins died at Lewiston, Ida., June 16, from disease of the heart. He was born in Utica, Ia., in 1866. He was a graduate of the State Normal School at Dexter. He received the degree of medicine from Keokuk Medical College. He practiced for a short time at Des Moines. In 1895 he located at Pendleton, Ore. During the Spanish-American War he served for one year with the Oregon soldiers in the Philippine Islands. On his return he became connected with the Pension Bureau at Washington, D. C. In 1903 he located at Lewiston. He was twice elected mayor of the city. Besides continuing an active practice of medicine he was also interested in civic affairs.

Dr. E. S. Dodds died in Seattle, June 3. He was 74 years of age. He was born at Mason, O., in 1849. He was a graduate of Miami Medical College. For many years he lived in Pueblo, Colo., but in 1907 he came to Seattle. Since 1917 he has been connected with the City Health Department.



Edited by GEORGE W. SWIFT, M. D.

SURVEY OF TUBERCULOSIS SANATORIA

On June 4, 1923, Dr. H. A. Pattison, Supervisor of Medical Service National Tuberculosis Association, New York City, began his second inspection of the seven tuberculosis sanatoria in the State of Washington at the request of the Committee on Hospital Standardization. When the standardization movement was well under way in Washington, requests were made to the State Committee to examine and suggest a standard for the tuberculosis sanatoria. At that time it was found that there was no standard for such institutions, but the American Sanatoria Association and the National Antituberculosis League were working out a plan, whereby an impartial rating could be made for each institution.

In their plan the rating is based upon certain fundamental requirements, divided roughly into four divisions: (1) Location, (2) plant and equipment, (3) administration, (4) medical and nursing service. Location is given 3 points, plant and equipment 5, administration 18, medical and nursing service 74, making a total of 100 points. Each of these four are rated on a basis of 100 per cent. Location, assuming it is given a rating of 90 per cent, multiplied by three would be 270 points; while medical service, if given a rating of 60 per cent, would give 60 times 74 or 4440 points; plant and equipment, assuming the rating to be 75 per cent, 75 times 5, or 375 points; assuming administration to be 100 per cent, 100 times 18, or 1800 points. The sum total of these points will be 6885, which would give in percentage 68.85 per cent as the rating for the institution.

The schedule of ratings are classified as follows: 90 to 100 per cent class A, 80 to 89 per cent class B, 70 to 79 per cent class C. If, however, any of the four subdivisions fall below the minimum for a class rating, automatically the hospital is placed in the next rating below. That is, if the administration rating is 85 per cent, while all other ratings are above 90 and the total rating is 94, the institution would be classed as class B because of the low rating in administration. Again, small institutions cannot hope to have the standard of equipment, the highly trained personnel and the administrative ability of the large state institutions, so another rating must be made similar perhaps to the American College of Surgeons rating, that is, hospitals of 50 beds or under, 100 beds or under and over 100 beds. This will probably be an additional classification.

Two years ago in Washington there was not a single institution which would be rated as a class A tuberculosis sanatorium. When Dr. Pattison made his inspection, he filed with the Washington Tuberculosis Association and the State Committee on Standardization and kept on file at the National Headquarters a copy of the report on each institution. Each report consisted of approximately twelve typewritten pages and covered every conceivable point regarding the institution. The summary explained wherein the sanatorium fell below the national standard and gave suggestions for improvement.

Washington was the first state to request this inspection and the first to offer the national organization an opportunity to demonstrate the value of their form of inspection as applied to a state organization. Each sanatorium received a copy of the report from the State Association, with a request that they attempt to improve conditions in compliance with the suggestions outlined by Dr. Pattison. The report for this year will be published at the state meeting in September. Dr. Pattison states that the improvement has been far beyond his expectations and that in each instance he has found a hearty cooperation on the part of the administration and a sincere effort to improve conditions materially. This is so marked that, to quote Dr. Pattison, the Washington sanatoria for the treatment of tuberculosis are in an excellent condition.

We have seven sanatoria: one at Elma of 22 beds, one at Tacoma of 100 beds, one in Seattle of 206 beds, one in Spokane of 164 beds, and one in Snohomish of 40 beds, a private sanatorium Laurel, Beach in Seattle of 50 beds, and an endowed institution, Riverton Sanatorium at Riverton Heights of 75 beds. The latter are the only two private sanatoria listed, neither of them receiving any support from the state. The State Board of Health is given authority by law to compel certain standards from the county institutions that receive state support and Dr. Paul Turner accompanied Dr. Pattison on these inspection trips and is cooperating in every way to elevate the standards of the institutions. The Washington Antituberculosis League, thru its county ramifications has been a tremendous influence in developing the county units and the state system as a whole. The question naturally arises, is all this worth while and wherein does it apply to the medical profession as a whole.

In 1911 the number of cases of death from pulmonary tuberculosis per 100,000 population was 108.5; in 1920, 80.2; in 1921, 66.5; in 1922, 63.4, a decrease of 41.6 in eleven years. There can be no more convincing argument of the value of the fight against tuberculosis. It is an actual fact that a winning fight is being made.

The factors to be considered in this fight are the prevention of tuberculosis in children by the proper care of their bodies, their surroundings and the food that they are given to eat. So many different factors are included in this that it is unnecessary to enumerate them all. Suffice to say that all public health organizations and individuals carrying on this great campaign deserve a great deal of credit and should have the support of everyone. The little penny seals we buy at Christmas time are practically the only source of revenue that the Washington Antituberculosis League has and with the money derived from these sales they carry on this tremendous piece of work.

The State Association, by bringing about the standardization of the sanatoria, is doing a great work for the fight, because it lending the powerful influence of the State Association in an effort to get better equipment and service for the doctors of the state. We realize that, with an annual death rate of 1200 patients and only 700 beds in the state for the use of all tuberculosis patients, we are far from being properly equipped. This death rate must be cut down; we must have more patients in the sanatoria about the state and we must pay more attention to the forces that are working harmoniously toward the ultimate goal—a state free of tuberculosis.

Hospital standardization in the State of Washington has brought together a number of forces in the campaign against tuberculosis and has stimulated a desire on the part of all of these forces to continue this great battle. Washington leads all states in its tuberculosis problem. This is a statement from the National Tuberculosis Association. We must all do our share in keeping that record. A factor soon to be felt in this problem is the State Committee on Tuberculosis, working thru the Contact Committee with the Public Health League and in cooperation with the State Board of Health and the Washington Tuberculosis Association. The state committee will soon lead in this fight.

BOOK REVIEWS

Edited by KENELM WINSLOW, M. D.

Exercise in Education and Medicine. By R. Tait McKenzie, M.D., LL.D., Professor of Physical Education and Physical Therapy and Director of the Department of Physical Education, University of Pennsylvania. Octavo of 601 pages, with 445 illustrations. Philadelphia and London; W. B. Saunders Company, 1922, Cloth, $5.00 net.

The first part of this book is devoted to exercise in education, describing the physiology involved in exercise and the methods of physical training in vogue in Germany, Sweden and France, followed by that in our schools and colleges and in the education of the blind, deaf mute and mental and moral defectives. The study of the growth and comparative merits of the various foreign methods of physical training are of much interest. Not the least entertaining features of the book are the heads, modeled by the author, expressing various forms of fatigue in physical contests, and the life-sized figure of the physically ideal American student is a striking work of art, embodying the average measurements and proportions of the best fifty men in colleges in all-around strength tests for a period of eight years. The height is 5 ft. 9 inches, weighing in life 150 lbs. The chest expanded is 40 inches, and the girth of the waist 30 inches; the age is twenty-two.

Not only are all methods of massage and movements noted, but all kinds of most elaborate apparatus are pictured and described for production of exact movements in defective joints. The treatment of the more common postural defects, as round shoulders, scoliosis, and weak ankles, flat feet, etc., will be found of much practical value, but the treatment of hernia by exercise is a novelty and will be looked upon with some, if not considerable, incredulity by most medical men. In diastasis of the recti in women following pregnancy, exercise seems rational, but the author extends the treatment to inguinal hernia, preferably in the young, altho he has seen cures as late as fifty-four years. The hernia is reduced and a truss applied, and, during special exercises, the fingers support the dilated internal ring or a truss is worn. One may engage in most games and exercises, as swimming, dancing, tennis and golf, but the author draws the line at wrestling. The prognosis is about 70 per cent. of cures in selected cases. The very high reputation of the writer as the leading authority on exercise makes this subject of great interest. There are very instructive chapters on exercises in respiratory, circulatory and nervous diseases.

The whole matter of exercise as a therapeutic means is too much neglected by the practitioner. It is much more important than drugs in most chronic diseases. When one sees a great reputation chiefly built on the employment of proper posture and exercise in chronic diseases, as in the case of Goldthwait, one may realize the value of such treatment now largely exploited to much pecuniary advantage by the osteopath, etc. There is no better book than the one under discussion in which to discover the proper principles of exercise therapeutics.

Practical Handbook on the Diseases of Children. For the use of Practitioners and Senior Students. By Bernard Myers, C.M.G., M.D. (Ed.), M.R.C.P. (Lond.) Physician to the Royal Waterloo Hospital for Children and Women, London, etc. With 61 Illustrations. 548 pp. $5. P. Blakiston's Son & Co., Philadelphia. 1923.

The book represents twenty-one years of the author's experience in pediatrics. His infant feeding is not up to our present day standard in this country. The treatments of the various diseases are good, being concise, specific and clear; with, as a rule, dosage of the drugs specified. His work on infectious diseases is excellent, being boiled down to the least common denominator and yet in a form where it can be easily read, and only important details are given. Here again his treatment is both specific and concise. Chapter 33, Remarks on Practical Treatment, is well worth careful reading.

While he has compiled most of the book, his associates, and others upon request, have contributed chapters and articles on biochemistry, sera and vaccines in children's diseases, an excellent chapter; and also special articles on syphilis and venereal diseases, orthopedics and the teeth. For the general practitioner and student, for whom the book is intended, it is a good conservative work for reference.

Moon.

An Introduction to the Practice of Preventive Medicine. By J. G. Fitzgerald, M. D., F. R. S. C., Professor of Hygiene and Preventive Medicine, University of Toronto; Assisted by Peter Gillespie, M. Sc., C. E., Professor of Applied Mechanics; and H. M. Lancaster, B. A. Sc., Director of Laboratories, Provincial Board of Health and Demonstrator in Sanitary Chemistry, University of Toronto. Cloth, 826 pp., $7.50. C. V. Mosby Co., St. Louis. 1922.

The author writes this book especially for the physician in general practice. While there are full time public health workers who are paid by the state, the physician may act as part time officers, or "what is more important he can and will become the supervisor of public health of the individual family. To outline some of the work of the physician who is to function on the preventive as well as curative side of medicine is the purpose of this book. It may be found useful by medical practitioners, students of medicine or public health nurses."—So states the author in his preface. It is probable that, while the physician will supervise the health of the family, thereby reducing his income, he will not even be paid for it.

The book is well written and takes up in order the separate infectious diseases and all the preventive means, individual and public health measures, that may be adopted. The book is well abreast of the times and is written with admirable regard for the essential matters, so it is concise and yet comprehensive. There are chapters on water, milk, food and food poisoning, diet and deficiency diseases, domestic and community sanitation, plumbing, sewage, water supply, etc. Also other chapters on mortality, school hygiene, public health clinics, rural hygiene and public health, air and ventilation, industrial hygiene, demography and vital statistics, public health organization and education, with appendices by many different writers. The work is a clear, well ordered, concise, authoritative and comprehensive treatise on the subject.

Winslow.

Applied Psychology for Nurses. By Donald A. Laird, Assistant Professor of Psychology, University of Wyoming, etc. Illustrated. 236 pages, $2.50. J. B. Lippincott Co., Philadelphia and London, 1923.

The author states this book is the result of an attempt to select from the vast literature of psychology those facts which will be of the most immediate aid to nurses in understanding their patients, themselves and their fellow man. Part One is introductory, while Part Two presents the biologic foundations of behavior. Part Three presents practical applications of psychology, and Part Four deals with certain abnormal aspects of mental conditions. While the volume is not a complete digest of psychology or insanity, it presents many valuable suggestions which will materially assist the nurse to deal with nervous and mental abnormalities.

First Aid X-Ray Atlas of Fractures and Dislocations. By H. C. Orrin, O.B.E., F.R.C.S. (Ed.) Late Surgeon to the Third London General Hospital, etc. 76 pages $1.00. Paul B. Hoeber, New York ,1923.

This little volume is intended for teaching the principles of first aid in dealing with fractures. After a brief description of the skeleton with x-ray illustrations, there follow chapters describing different fractures. Each is illustrated by a radiogram of the normal part, a second of the fracture under consideration and a cut of the appliance to be applied for first aid. It is a convenient little book for those engaged in this line of work.

First Aid X-Ray Atlas of the Arteries. By H. C. Orrin, O.B.E., F.R.C.S. (Ed.) Late Surgeon to The Third London General Hospital, etc. 46 pages, $1.00. Paul B. Hoeber, New York, 1923.

This little volume contains a series of x-ray reproductions of the injected vessels, which at the same time show the bones and their respective relations. An explanation accompanies each, describing the different arteries. The various charts present vivid demonstrations of the anatomic parts under consideration.

Textbook of Therapeutics including the Essentials of Pharmacology and Materia Medica. By A. A. Stevens, M.D., Professor of Applied Therapeutics, University of Pennsylvania, Philadelphia. Sixth edition, entirely reset. Octavo of 793 pages. Philadelphia and London: W. B. Saunders Company, 1923. Cloth $6.25 net.

In this latest edition of Stevens' well known textbook on therapeutics the following agents appear for the first time: Benzyl benzoate, papaverin, pituitary extract, thyroxin, thromboplastin, methyl alcohol, benzyl alcohol, mercurochrom, germanium dioxid, emetin, yeast, acid sodium phosphate, aluminium chlorid, luminal, atophan, silver arsphenamin, acriflavin, proflavin, chloramins, scarlet red, quinidin, optichin, surgical paraffin and carbonic acid snow.

This work is notable in that it neither unduly omits physiologic actions nor does it confuse the reader by the inordinate detail of these actions found in some of the more highly scientific works on pharmacology. The book is a concise, clear cut, conservative exposition of the subject and at the same time wholly up to date. WINSLOW.

Textbook of Anatomy and Physiology. For Training Schools and other Educational Institutions. By Elizabeth R. Bundy, M.D. Formerly adjunct Professor of Anatomy in the Woman's Medical College of Pennsylvania, etc. Fifth Edition. Revised and Enlarged by Martha Tracy, M.D., Dr. P. H. and Grace Watson, R. N., with a Glossary and 266 illustrations. 442 pp. $2.50. P. Blakiston's Son & Co., Philadelphia. 1923.

It is difficult to conceive of a book better adapted to training school uses than this work of Dr. Bundy's. With admirable clearness it has associated the anatomy of the human body with the physiologic functions of the various organs, leaving little to be desired in brevity, clarity and thoroness. This fifth edition has been enlarged and revised to include important facts which are the result of latest research in the field of nutritional physiology and endoctrine glands. The illustrations are profuse and of excellent character; the typography of highest quality.

WEST.

The Surgical Clinics of North America (issued serially, one number every other month). Volume III, Number 2, (New York Number, April, 1923). 286 pages with 159 illustrations. Per Clinic year (February, 1923, to December, 1923). Paper $12.00 net; Cloth $16.00 net. Philadelphia and London; W. B. Saunders Company.

This number contains many valuable reports from the clinics of distinguished New York surgeons. Albee has an extensive article on ununited fractures of the lower jaw, illustrating many details of his well-known methods of fracture treatment. Other fracture clinics are reported by M. K. Smith and Weigle, dealing with fractures of the humerus, acetabulum, spine, femur and tibia. Many other equally instructive clinics are reported, discussing many surgical problems.

Surgical Clinics of North America. Volume 3. No. 3. June, 1923. San Francisco Number.

This volume contains the reports of clinics from the hospitals of San Francisco. Many of the well known surgeons of that city are represented. The reports cover a great variety of subjects, including operations on the digestive tract, the brain, hernia and liver. Several deal with diseased conditions of the gallbladder. Fractures and dislocations are also treated. This is an interesting and instructive volume on treating any surgical condition.

Medical State Board Questions and Answers. By R. Max Goepp, M. D., Professor of Clinical Medicine at the Philadelphia Polyclinic; assistant Professor of Clinical Medicine, Jefferson Medical College. Fifth Edition, Thoroly Revised. Octavo volume of 731 pages. Philadelphia and London; W. B. Saunders Company, 1923, Cloth, $6.00 net.

The material in this volume has been selected from state board questions asked during the past four years, preference being given to those of the larger states. The list of questions represents fairly those usually propounded by state boards. The chief purpose of the book is to provide a convenient compend for those wishing to prepare themselves for state board examinations. At the same time it furnishes much condensed information on the subject which is under consideration. It is a

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valuable compilation for the purpose for which it is intended.

New and Nonofficial Remedies, 1923. Containing Descriptions of Articles which Stand Accepted by The Council on Pharmacy and Chemistry of the American Medical Association, on January, 1923. American Medical Association, 1923.

The descriptions of accepted articles published in this volume are based on investigations made under the direction of the Council and in part on evidence supplied by the manufacturer. Many new articles are included. Quite a list of articles formerly published has been omitted because they are off the market. Also, other articles have been dropped whose period of approval has expired, for which they stood accepted. A detailed description is unnecessary of a volume so well known and authoritative as this.

Studies on the Therapeutic Application of Bacillus Acidophilus Milk. In view of their own results and those of other observers, Harry A. Cheplin, H. Clifford Fulmer and Clyde O. Barney, Syracuse, N. Y. (Journal A. M. A., June 30, 1923), feel that the application of the acidophilus milk therapy is worthy of further investigation in the treatment of other ailments directly or indirectly referable to intestinal disturbances. They suggest also that it be given a trial in specific infections, such as typhoid and paratyphoid fevers, and dysentery. Acidophilus milk therapy, if properly carried out, is a resource which has a sound, logical, scientific foundation, and which in time may take a high place in the scale of efficiency. Bacillus acidophilus, when given by mouth in the form of minimum amounts of milk cultures, lend itself to complete implantation and colonization within the human digestive tract, effecting a complete simplification of the fecal flora, and supplanting almost all known intestinal toxicogenic microbes. In chronic constipation, there was marked clinical improvement in the so-called toxic symptoms and regulation of the fecal eliminations from the bowel. In mucous colitis, beneficial changes were noted clinically, with daily natural defecations free from any mucus.

The Therapeutic Value of Egg Yolk in Rickets. In view of the high content of fat soluble vitamin in egg yolk, and the close association in nature of this vitamin with the antirachitic factor, as best exemplified in cod liver oil, it appeared worth while to Alfred F. Hess, New York (Journal A. M. A., July 7, 1923) to test the potency of the yolk in relation to its prophylactic and curative value in rickets. Rats were fed the Sherman and Pappenheimer low phosphorus diet as the basic rickets-producing dietary. To this diet 0.5, 0.3, and 0.25 gm. of egg yolk was added daily. Experiments showed that egg yolk is able not only to protect young rats from rickets, but also to cure them of rickets. Experiments showed, on the other hand, that white of egg is not merely devoid of antirachitic properties but seems to enhance the rickets-producing quality of a dietary. The yolk of one egg was added to the regular formulas of each of twelve infants, in the attempt to forestall the occurrence of rickets and the seasonal ebb of the blood phosphate. In most instances, this addition was made in December, when the tendency to rickets becomes acute. By this simple supplement to the diet, all the infants were protected from rickets, as judged by clinical, roentgenologic and chemical criteria. The percentage of inorganic phosphate in the blood, instead of falling to 3.6 mg., the ebb observed last March, was maintained at 4 mg. or more, a level encountered during the summer months. The calcium content of the serum also was unusually high. It is evident that yolk of egg possesses considerable protective value in rickets.

ADVERTISERS NOTES

The following communication appeared in The London Times of March 24. The authors, Sir W. M. Bayliss and Dr. C. W. Saleeby, are among the best known medical authorities in Great Britain. This letter is of interest in this country as showing the attitude of physicians in England towards the narcotic situation there and particularly to cocaine. It is also of interest to note that credit is given to American research for the discovery of a safe substitute for cocaine.

To the Editor of The Times:

We submit that the abolition of the use of cocaine by international action is the only effective means of ending the evils to which this drug gives rise, and this is now feasible without detriment to any department of surgical practice.

The failure, everywhere, of all past or present methods of control is acknowledged. One of us has recently observed, in Montreal, the futility of the combined efforts of the police, the health authorities and the customs officers, and he has returned to Europe to find similar failure alike in this country and in France. Montreal, it may be noted, is the headquarters for the illicit distribution of the drug in North America. It is evident, and for evident reasons, that so long as the drug is manufactured it will be misused. In the light of the experiences of other countries, we are entirely skeptical of the success of the new legislation proposed by the Home Office.

The Committee on the Use of Cocaine in Dentistry reported in 1917 (Cd. 8489), suggesting further restrictive legislation. One of the present writers, serving on that Committee, did not sign the report, but appended a memorandum in which the view was expressed that, according to the evidence of leading dental surgeons, cocaine was no longer needed in dentistry, completely effective substitutes, such as procaine, being available.

A new synthetic substitute, known for short as "butyn" has now been prepared in Chicago, and tested widely with very good results. Like procaine, it has no action on the central nervous system. A highly favorable report on its use in ophthalmic practice appeared in the British Medical Journal for January 13 last. Its introduction completes the argument advanced in 1917.

International action should, therefore, be taken to end the present manufacture of cocaine in Germany and Switzerland or elsewhere, and the cultivation of the cocoa plant, in Peru, Java, Bolivia and other countries. The best instrument for such action, given an instructed and active public opinion in the various countries concerned, is the Opium Committee of the League of Nations. Tho neither the United States nor Germany is as yet a member of the League, both of these countries are represented on the Opium Committee. We urge that our Government should give full and cogent instructions in this sense to Sir Malcolm Delevigne, the British representative on that Committee, prior to its next meeting in May. This, we are convinced, is the only way with cocaine.

We are, Sir, yours,

W. M. Bayliss
C. W. Saleeby

NORTHWEST MEDICINE

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ADDRESS

THE FUNCTION OF MEDICAL SOCIETIES *

J. Earl Else, M.S., M.D., F.A.C.S.

PORTLAND, ORE.

The education and training of a physician may be divided into three parts. First, the premedical preparation; second, college work and interneship; and, third, postcollege training. The past ten years experience as a member of the faculty of a medical school has given me some very definite ideas regarding premedical and medical education which I should like to discuss, but I shall pass over these to the postcollege training and instruction, as it is of more interest to those present tonight.

Postcollege training and instruction is acquired in three ways. First and most important, in the school of actual experience; second, in medical societies and association with other physicians; and, third, postgraduate work. The value of careful and consistent study of the patients seen in everyday practice is unfortunately overlooked by many as a source of information that has no peer. Postgraduate instruction should have more attention given to it by educators than has been given in the past. Much of the time spent in postgraduate study is wasted.

It is to the medical societies, however, that our interest is turned this evening. The function of medical societies is four-fold. First, stimulation of its members to think for themselves; second, instruction of its members; third, instruction and protection of the public; and, fourth, protection of the interests of its members.

The stimulation of the members of the medical societies is best accomplished thru the encouragement of its members to make systematic studies, to do research work and present the result of their investigations before a society, where the paper will be discussed by fellow-members. The average physician is loath to prepare a paper to be read in the presence of those whom he looks upon to be superior to, or better trained than himself. He is afraid that the ideas which he has developed and the conclusions which he has reached will appear immature or hasty to those of wider experience or better training. Among his fellows, however, he is willing to present the results of his thought and labor. He will spend time searching thru literature. He will prepare himself to defend his own ideas or to attack the conclusions of others with which he does not agree.

As a result of such debate and discussion, not only those who take part but those who listen are stimulated to go home to read and study that they may do better work. This is often not the case, however, with the average physician, when he listens to a presentation by a man whom he considers to have superior training and advantages. After having heard such a paper he may accept for his own use those things which he thinks he can carry out but he is prone to discard many things which he

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* President's Address read before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

could use, on the basis that the author, because of his superior hospital advantages and training, can do things which the general practitioner in his daily routine of busy practice would find impossible. The suggestion of a colleague appears to him to be practical because the colleague has been able to accomplish the result under the same conditions as those under which he labors, but the suggestion from the learned professor, while it may be identical to that of the colleague, he is apt to regard as being impractical for the general practitioner.

As far as the stimulation to do better work is concerned, it does have an influence. Yet he often returns to his own field somewhat discontented with his lot and convinced that the work of the type of which he has heard is not for the men in general practice, that research and independent thinking is to be carried on only by those who have greater opportunities and better facilities.

Educational. The program of every medical society should be educational in its type and during the course of the year should cover the subjects that are of greatest interest to the majority of the members. This does not mean that the same subjects should be repeated year after year, but it does mean that the advancement that has been made should be covered. In addition to covering the general subjects, there should be some papers upon the special subjects that are of more general interest. The subjects that are of interest only to special groups should be covered in organizations of that special group and not in general societies. The papers should be both theoretical and practical. On the program there should occasionally be men brought from the institutions of learning, in order that the members may be kept in touch with those who are doing research work and those who have opportunities of a larger experience. This does not mean, however, that the investigations and conclusions of the members of even the smallest and most remote medical society are not of actual educational value.

Education of the Public. The public in general depends upon those who have had special training in certain lines to be the leaders in those lines, but when the leaders fail to lead and the educators fail to instruct, to whom shall the public turn? There were times in the past when the average individual was willing to accept a statement from one whom he considered an authority without inquiring into the reasons for such statement. That time has passed; the average individual of today is just as ready to accept the opinion of an authority, but before accepting it he wishes to ascertain that the one giving the opinion is an authority and to do this he asks certain questions. What does the average layman know about contagious disease and its prevention, or the prevention and cure of cancer and tuberculosis? Anyone who will give him a theory and explain that theory in a logical manner will receive his attention.

During the past third of a century the various cults and isms, christian science and other faith healers have been pouring forth doctrines. To the untrained mind these appear logical. During this time the physicians have remained silent or acted only spasmodically. The traditional reticence of the medical profession has contributed to the present chaotic condition in the minds of a considerable portion of the laity relative to disease. Our medical societies must awaken. They must become active. They must assume their place in society as educators upon those subjects in which the profession is especially trained.

Prohibition has come as a result of the movement on the part of a few women a half century ago, when they secured the adoption of laws in various states requiring the teaching the evil effects of alcohol upon the body in the public schools. The children thus taught have attained maturity and have demanded the exclusion of this substance which they have been taught is dangerous to humanity. The medical profession must take a leaf from the notebook of these women. We must see that proper training is given to the children relative to the body and protection of health and prevention of disease. When we come to the time that the general public has been educated in these matters, we need have no fear regarding legislation in the interest of those quacks and isms, schools and cults that prosper upon human ills to the detriment of the unfortunate. The various cults and isms have strong lobbies and large sums to spend in lobbying, but the amount that they have is insignificant as compared to the amount that the liquor interests have spent and are still spending. A physician's first business is the protection of the health and prevention of disease in his community. In educating the public by beginning with the children, this purpose can be best accomplished.

The Protection of its Members. At the present time there are large numbers of organizations of various cults and isms which are taking advantage of the medical profession. The members of these cults and isms, lacking the broad view and bearing of the professionally trained man, stoop to various tricks of commercialism for the purpose of securing business. Because of their propaganda and the spreading of their various doctrines, the laity have become uncertain in whom to place their confidence. The medical profession has permitted a growing doubt on the part of the laity, so that today we find the hard-working, self-sacrificing general practitioners greatly imposed upon. It is the duty of the organized medical profession to protect the interests of its members. This does not mean that they must necessarily enter into politics, altho this will often be necessary, but it does mean that the physicians must become the educators and leaders of the general public in health matters.

To accomplish these four purposes in our medical societies, we must have various organizations, for it is impossible for one society working alone to fully accomplish this four-fold program. It is necessary that these organizations be so planned and so directed that they work harmoniously for a common end and not to cross purposes. The foundation upon which medical society work must be based is the local unit, the city or county society. The local units must be grouped into state or provincial societies to consider the needs of a larger district and enable the stronger localities to aid the weaker. The state or provincial societies need to be again grouped into district societies, in those sections where they have problems peculiar unto themselves and in which state or provincial societies are not large enough to meet these problems. And, finally, there is the union of all of the societies of the various districts into the national group.

All of this structure is built upon the city or county society as its foundation. The local society has a responsibility, for the success of its members depends largely upon the character of its work. The local society must have as its greatest object the stimulation of its own members to do original thinking and original work. Original work must not be construed to mean laboratory work alone. The careful study of an unusual case or a series of cases is real research work and its presentation is of practical value. While the educational part of the program is best served by papers from its own members, the society must keep in touch with advancing medical thought and with the profession in adjacent territory, so there should be occasional papers read by men from other districts and by men from educational centers. These papers, however, must not dominate the program because, just as sure as they do, the men will cease to think for themselves. They lose confidence in their own ability to do original thinking and original work and come to depend more and more upon others to do their thinking for them, which is fatal to the development and advancement of any one to his greatest capabilities.

The protection of the interest of the members of the local societies and the education of the public go hand in hand. The physicians as individuals must be willing to explain the nature of disease and its prevention to their patients. This should be done largely in conversation and partly thru addresses and talks before various organizations. The laymen of today are anxious to learn more about their bodies and the protection of their health. If they were not, they would not be listening so attentively to all the trash that is being given to them by those who are doing it for ulterior motives. Any county society can carry on a propaganda of education for the public and an attentive ear on the part of the press and the public generally will be found.

It is necessary for the medical societies occasionally to make their influence felt in politics. A physician has a large number of very close friends and, altho he imagines that his influence at the time of election is insignificant, it is far greater than he realizes.

In the larger centers the county society will need to be supplemented either by subdivisions or by other organizations. The dividing of a society into sections serves better than the organization of independent special societies, for the organization then has a definite head and works in harmony for a common end, the stimulation and development of its members. One of the important supplemental aids is an academy of medicine. The program of such an academy should be purely educational. It should bring to the community educators from a distance. Its work cannot well be served by a county organization, for it has to have money to carry out its program. The dues of a county organization should be as low as is consistent with the purpose for which it exists, as otherwise it will exclude from its membership young men who are especially in need of its training and who cannot afford to pay larger fees, and some of the unfortunate older men who have given their lives unsparingly without adequate financial returns to care for them in their later days. An academy of medicine must not forget that, while it is made up of a self-selected group of individuals and is a private organization, its function is public and its purpose is that of the education of the profession in its community.

A state or provincial society is in reality a grouping together of the local societies of the state or province to serve the same members but in a larger way. The first and most important function of the state society is the stimulation of its own members, even as is that of the county society. The work of the state society is accomplished thru its programs at the regular meetings, thru its various standing committees, its legislative body and its secretary and executive. If the state society is to serve its membership to the best advantage, the programs must be planned to meet the needs of its membership. They must be distinctly educational, but at the same time it must give an opportunity for the expression of the thought and investigations of its members.

During the course of the year in the various component societies, many papers of value have been read and, if those societies have been properly conducted, some research work has been done. A state society can serve its membership no better than by giving an opportunity for those, who are doing original thinking and original work, to present that work before their fellows of the larger group. It stimulates the one who presents the paper to do better and bigger work. It stimulates those who discuss the papers to read more and think deeper. It stimulates those who listen to go home and work, because they see that some one else living and working under conditions similar to their own is able to do work equal to that of men in the greater centers. The programs of a state society should have papers by outside men but the majority should be by local men.

Last year it was my privilege to attend four state societies. In one the papers were with one exception by men of the Northwest, while in the other three the papers were practically all by men from a distance. The papers presented by resident members of the one society were equal to and superior to many of the papers that I heard before the American Medical Association in St. Louis. One man from a small town presented a paper which showed that, altho he was in a small community, he was serving his patients in a superior way. In the discussions, not only in the session but among the members at other times, it was easy to see that the men were going home with the idea that it was possible for them to do better work than they had been doing. The interest shown in the program of this society was far greater than in the other three, where the program was given by outside men. To our distinguished guests, who have so capably presented this most practical program, I wish to say that there have been many in your audience during the past three days from small towns and hamlets who could have gone on to the platform and presented papers that would have been of credit to any local society. These men are unknown because of a lack of opportunity of expression both before medical societies and in medical journals.

The education of the public is a very important function of state societies. Here in some of our Northwest states a semiindependent organization has been created for this purpose and with proper financing this organization is going to serve as the educational branch of the medical society for the laymen, and by the education of the laymen and the protection of their interests, the interests of the medical profession will be protected.

We now come to the district society. As previously stated, the great function of the state society is the stimulation of its members and that can be best accomplished thru giving its members an opportunity for the expression of the results of their labor. We are, however, peculiarly situated. In the East it is but a short distance from one medical center to another. The West is a land of magnificent distances, and we are not in close touch with each other or with the East. Owing to the time consumed and the cost of transportation, it is impossible for many of our members to go East to visit the great educational centers. Those who can go find the time spent in travel and the expense entailed a serious handicap. For that reason we have here in the Northwest a condition that differs from other sections of the country. We need to come in closer contact with the great educational centers which our distinguished guests tonight represent.

Some of our state societies have tried to overcome this by having their programs made up largely of eastern men and as a result they have failed to stmulate their own men to work and think for themselves. The programs have not been well attended, despite the fact that men have come from a long distance to present papers at these meetings. That was especially true last year.

It was to overcome this condition that the Pacific Northwest Medical Association was organized. At the annual meeting of this Association, we can bring from the East men who are holding teaching positions and whose incomes would not permit them to make the trip across the continent for the purpose of delivering an address. We can select men to give a balanced program, because thru the organizations covering the entire northwestern portion of the United States and the southwestern part of Canada, we have a sufficient number of men willing to contribute to make this possible.

To those who have attended the Spokane and Seattle sessions of the Pacific Northwest Medical Association there can be no doubt of the value of this organization. Its place in the Northwest and its course in its relationship to the state and provincial societies must, however, be carefully guided. It has been the thought by some that this organization will eliminate or emasculate the state societies, but the success of the Washington State meeting last year demonstrated that this is not true. If the state society will recognize its place in medical education, if it will design its program for the purpose of stimulating its members to do work and express themselves, this organization will serve as the greatest stimulant for the state society that was ever organized or promulgated. It has a definite place, it has a great purpose and that it is accomplishing that purpose, we have sufficient evidence.

Above the district organization comes our national societies. These have accomplished great things. It is true there has been some criticism but we must not forget that it is easier to criticise than it is to accomplish. The development of the younger men from their graduation from the medical school lies upon the shoulders of those who are already in practice. The advancement and the realization of the aim and the purposes, not only of the younger men but of us who graduated some few years ago, depend upon our uniting and working together for an unselfish purpose. Let us forget our own selfish ends and unite in our medical societies, local, state, district and national, for the purpose of developing every member to his greatest capability, for the purpose of protecting the interests of the public, whose health is placed in our hands and thus make the medical profession what it should be, the greatest altruistic profession.

709 Stevens Bldg.

THE HISTORY OF THE DISCOVERY OF INSULIN *

J. B. Collip, M.A., Ph.D.

J. Biol. Chem. 1923. LVI, No. 2. 513.

EDMONTON, CANADA
From Department of Biochemistry, of the University of Alberta.

The recent work leading to the development of insulin, the internal secretion of the pancreas, by a collaboratory group at Toronto may conveniently be divided into four phases: (1) The establishment of definite proof[1] that the pancreas secretes an active principle which is capable of influencing in a profound manner carbohydrate metabolism. (2) The isolation of the principle[2] in a state of sufficient purity to permit of the continuous administration of the same to the human subject by subcutaneous injection. (3) The clinical test of this purified product which proved that all the cardinal symptoms of diabetes could be made to disappear when insulin in adequate dosage was administered[3]. (4) Large scale production of the purified insulin.

Altho all this was accomplished within a relatively short time, it must be recognized that the attainment of these results came as a sequel to the numerous and valuable researches in this field of the past forty years, conducted by investigators in various countries.

The first epoch-making piece of experimental work on pancreatic diabetes was that of Von Mering and Minkowski[4]. In 1889 these investigators demonstrated that the complete removal of the pancreas from normal dogs was followed by the development in such animals of a condition, resembling in practically all respects severe diabetes mellitus in man. Prior to the time of publication of the work of Von Mering and Minkowski numerous references had been made in the literature to some possible connection between the pancreas and diabetes, suggestions based very largely on postmortem observations. Von Mering and Minkowski did not definitely interpret their very positive results as an indication that the pancreas contained a specific principle, the lack of which produced diabetes. However, Minkowski[5] did consider that the pancreas might act in some manner upon the organs which used sugar. This would suggest that the idea of an internal secretion was apparent to this author.

Lepine[6] was the first to definitely suggest that the condition of diabetes might be due to the withdrawal of an internal secretion which was essential

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* Read before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

for the metabolism of sugar. This view was considerably strengthened when Hedon[7] showed that, if a portion of the pancreas was first grafted successfully under the skin of the abdomen, the rest of the gland could subsequently be removed without the resultant manifestation of diabetes. Severe and quickly fatal diabetes was produced, however, if the grafted portion of the gland was removed at a later operation. Numerous attempts were later made by various investigators to obtain some direct evidence of the presence of the internal secretion or hormone in the pancreas or in the blood emerging from the gland. The most noteworthy investigation of this nature was carried out by Zuelser[8].

Murlin and Kramer[9], Kleiner[10], and Paulesco[11] observed a transitory reduction in the percentage of blood sugar and in the sugar excretion of depancreatized dogs, following the intravenous injection of aqueous extracts of the normal pancreas. The results of these as well as other investigators, while furnishing evidence that certain pancreatic extracts did contain a substance which exercised a specific effect upon carbohydrate metabolism in depancreatized animals, were nevertheless considered insufficient to justify the further development of such extracts with a view to use them in the treatment of diabetes in man.

Schafer and Diamare[12] in 1889 suggested that the source of the internal secretion of the pancreas was not the cells of the acini of the gland but rather the cells in the insular tissue. This suggestion was made as a result of the observation that this tissue has a rich supply of blood capillaries.

It was discovered by Schultze[13] that complete blockage of the pancreatic duct was followed by sclerosis of the gland but that no signs of diabetes were subsequently manifested. The islet cells were by this procedure presumably left with their circulation and function intact. Weichselbaum and Stangl[14], Opie[15] and others have described degenerative changes in the islet cells of the pancreas in fatal cases of diabetes. Allen[16] compared the histology of the islets in a still normally functioning pancreatic remnant with those in a similar portion whose function had been broken down and permanently destroyed by overwork. Lane[17] and Bensley[18] had shown that two types of cells occur in islet tissue which were named respectively α and β cells. Allen found in his histologic investigations that the α cells had apparently not suffered in functional break-down of a pancreatic remnant, while the β cells showed very definite evidence of degenerative changes. He also found that recovery of the β cells was possible if a period of rest were imposed as by starvation sufficiently early. That diabetes mellitus was due to a breakdown of function of the islets of Langerhans and particularly of their β cells was, therefore, quite definitely established and the Allen dietetic treatment which was so largely used prior to the development of insulin was based largely upon this knowledge. Woodyatt[19] in 1909 held clearly the conception that diabetes was due to a deficiency of the internal secretion of the pancreas.

Very definite proof that the pancreas does produce an internal secretion was furnished by Forschbach[20]. This investigator found that the extirpation of the pancreas of one parabiotic dog was followed by slight glycosuria only. That the metabolic derangements characteristic of diabetes were absent was shown by the quick healing of the wound and the absence of cachexia. In these experiments the internal secretions of the remaining pancreas of the other (normal) parabiotic dog sufficed for the needs, not only of itself but also of its depancreatized parabiotic mate. After separation the animal which had been depancreatized developed diabetes.

Biedl[21] in 1913 summarized the results of various workers up to that date as follows: All the known facts concerning pancreatic diabetes and especially the profound changes in the metabolism of the carbohydrates, to which it gives rise, point unequivocally to suppression of an internal pancreatic secretion which, under normal conditions, plays a decisive role in the metabolism of the carbohydrates.

A demonstration of an apparently specific effect of the internal secretion of the pancreas was furnished by Clarke[22]. This investigator found that the isolated mammalian heart removed glucose from a perfusion fluid more rapidly, when the fluid had first been perfused thru the vessels of a normal pancreas, than it did when fresh Locke's solution was used.

In May, 1921, F. G. Banting, impressed with the idea that the internal secretion of the pancreas might be destroyed by proteolytic enzymes during extraction and that, therefore, extracts of normal glands might be rendered inactive by virtue of the enzymes contained, began work on the problem in Professor J. J. R. Macleod's laboratory and under his direction. An assistant, Mr. Best, in Macleod's laboratory, became associated with Banting in his preliminary work. Banting and Best sought to circumvent the action of destructive enzymes upon the internal secretion by preparing watery extracts of degenerated glands. They obtained positive results almost at once[1]. Watery extracts made at ice cold temperature of the freshly removed degenerated gland were found to cause a very definite fall in the percentage of blood sugar and in the hourly excretion of sugar, when injected intravenously into depancreatized dogs. They also found that the animals could retain and presumably use a certain amount of injected sugar. It is of interest in this conection to note that Carlson[23] had found that a pregnant animal did not become diabetic thru removal of the pancreas. They, therefore, used and obtained similar results with watery extracts of fetal glands.[1] Positive results were also obtained with extracts prepared by macerating the fetal gland or the whole gland in acidulated alcohol, filtering, evaporating the filtrate in a warm air current, removing fatty substances from the residue by leaching with toluol and finally taking up the solid in saline.

As this stage of the investigation, Dec., 1921, the writer, who was then attached to the Department of Pathologic Chemistry of the Uni- experimental work on this problem. The chief attention of the writer was devoted to the development of a method which would allow of the extraction of the active principle from the whole gland of slaughterhouse animals, in a sufficiently pure and stable form to permit of its continued use on the diabetic subject. He found early that extracts which were considered at that time highly potent could be prepared by macerating the gland with an equal volume of alcohol, filtering, adding one drop of glacial acetic to each 100 c.c. of filtrate and concentrating the acidulated filtrate to about one-fifth its volume in a vacuum still. Such an extract was a suspension of protein and lipoid in a clear straw-colored fluid which could be removed by filtration. It was found, however, that, while this straw-colored filtrate contained a certain amount of the active principle, the chief bulk of the same was contained in the protein fat residue.

Banting and Best[24] then prepared a sterile extract, using essentially the above technic in its preparation and delivered it to Drs. Campbell and Fletcher of the medical clinic of the Toronto General Hospital. They tested out this extract on a few diabetic patients. In one case they observed a 25 per cent decrease in the percentage of blood sugar, following its administration. However, aseptic abscesses developed at the sites of injection, due to the high protein content of the extract used. The extract which we had at that time was therefore absolutely useless for continued administration to the human subject, tho it did contain the active principle in potent form and could be used in physiologic investigations to ascertain something of the mode of action of the internal secretion. Banting and Best had used diabetic animals only in their preliminary work. A study of the effects of potent extracts on normal animals was therefore made and it was found at once that a ready means was at hand for testing the potency of extracts. A very definite fall in the level of blood sugar of a normal rabbit occurred, when a potent extract was administered by subcutaneous injection. It was also noted that, as the blood sugar fell in these animals, they became extremely hungry and would eat paper or wood shavings with great avidity. It was found in the earlier experiments of this type that the blood sugar fell for a few hours and then gradually returned to normal. As the potency of the extracts was increased, however, it was found that certain of the injected rabbits developed typical symptoms, marked chiefly by convulsive seizures with intermittent periods of coma and followed by death. Complete recovery was quickly effected, if glucose was administered. Adrenalin was found to produce a temporary beneficial effect.

The extract was also tried upon normal dogs which were under ether anesthesia. No hypoglycemia was noted in these experiments, so it was concluded that, as the glycogenic function of the liver is absolutely depressed by anesthesia, the probable point of action of the pancreatic hormone was the liver. An experiment to test out this hypothesis was, therefore, planned and carried out at once. An Airedale dog wt. 15 kilo. was depancreatized on Dec. 13, 1921. On Dec. 20, the blood sugar of this animal was 0.309 per cent and the twenty-four hour urine specimen contained 28 grams of sugar.

The crude pancreatic extract described above was administered as follows: At 11 a. m., Dec. 20, 15 c.c. of filtrate from extract injected. At 1:45 p .m. the blood sugar was 0.217 per cent; 10 c.c. of the protein fat residue on the filter were injected. At 2:50 p. m. the blood sugar was 0.085 per cent and at 5:00 p. m .it was 0.051 per cent. The urine became sugar and ketone free. On Dec. 21 the animal was given glucose and milk *ad lib.* At 6:00 p. m. 15 c.c. of extract were administered. On Dec. 22, at 10:30 a. m. 15 c.c. more extract were in- jected. At 2:40 p. m. 12 c.c. and at 4

15 c.c. more were injected. Glucose and milk were taken in quantity. At 6:00 p. m. the animal was killed and the liver removed at once and analyzed for glycogen. The glycogen content was found to be 25.6 per cent.

This experiment proved very definitely that the liver of a diabetic animal was capable of forming glycogen under the influence of the pancreatic hormone. These observations were later confirmed and extended. It was shown also that the fat content of the liver of depancreated animals fell as the glycogen content rose. It was also shown[25] that the administration of insulin to depancreated dogs caused a definite rise in the respiratory quotient indicating the combustion of glucose.

The next forward step in the research was the isolation of the hormone by the writer in a sufficiently pure and stable form to allow of continued use by subcutaneous injection in the human subject. This was followed at once by the clinical trial[3] of the purified hormone. The use of alcohol in preparing pancreatic extracts by E. L. Scott[26] in 1912 should be especially noted. Scott came so near to obtaining the active principle that it is hard to understand why he did not pursue his work further. The results obtained on depancreatized animals, lowering of blood sugar, decrease in sugar excretion, disappearance of ketones and rise in respiratory quotient were duplicated in this investigation on the diabetic human subject and insulin therapy had become an established procedure.

When, later, production of insulin on a semi-large scale was attempted (facilities being afforded by the Connaught Antitoxin Laboratories), great difficulties were encountered chiefly because the conditions of time and temperature which were adhered to in the original method could not be obtained in a large scale process with the facilities then at hand. For the development of a successful large scale process of manufacture the Eli Lilly Co. of Indianapolis, who later cooperated with the Toronto group, are largely responsible. It has been confirmed by workers in various laboratories that the essential details of the original process are absolutely sound.*

A very definite step forward in the further purification and stabilization of insulin has been made by Doisy, Somogyi and Schaffer, and by Dudley. Doisy, Somogyi and Schaffer[27] have found that insulin may be precipitated from solution by adjustment of the reaction to the isoelectric point. Re-[illegible]lution and precipitation of the final product of the original method is therefore possible. They have also shown that insulin may be removed from solution by ammonium sulphate. Dudley[28] has recently obtained a picrate which he finally converts into a soluble hydrochloride.

Physiologic investigations of the exact nature of the effects of insulin have been pursued with much vigor in various laboratories. Some of the chief contributions of the Toronto group have already been indicated. Up to the time that definite clinical investigation was begun the following salient points had been established:

1. Insulin causes a lowering of the blood sugar of both normal and diabetic animals.
2. Insulin produces convulsions in normal animals as a result of low blood sugar (0.045 per cent critical level).
3. Hypoglycemic symptoms can be definitely controlled by administration of glucose and to a degree by adrenalin.
4. The liver of a depancreatized animal can store glycogen under the influence of insulin.
5. The respiratory quotient of a depancreatized animal is raised by insulin, thus indicating utilization of carbohydrate.
6. Ketosis in depancreatized animals is abolished by insulin.
7. Depancreatized animals injected with insulin can retain a considerable amount of administered glucose.

The two essential points which were definitely established by experimental work on animals before clinical investigations was begun were: (1) the storage of sugar, (2) the combustion of sugar in the diabetic animal when injected with insulin. That insulin would be effective clinically was, therefore, well established before it was actually used. The clinical results following the use of insulin have not only equalled but have actually surpassed the expectations.

As more potent preparations of insulin were obtained, it was found that hypoglycemia could be produced in etherized dogs. A study[29] was undertaken to ascertain the power of insulin in counteracting hyperglycemia produced in devious ways. It was found that hyperglycemia due to piqûre, adrenalin, mechanical and carbon monoxide asphyxia, and ether were effectively antagonized or controlled by insulin. A great deal of testing of various extracts on normal rabbits was carried out and a large number of examples of hypoglycemic symptoms were obtained[30]. The collaborating group at Tor-

[illegible]unication.

onto disbanded on May 31, 1922. Since that time many further contributions have been made to the subject.

There was as yet no absolute proof that the hormone of the pancreas was elaborated by the islet cells. Macleod[31], taking advantage of the discovery of Rennie[32] that the islet tissue of Teleostian fishes is collected into nodules which are often encapsulated and thereby separated from the zymogenous tissue, secured practically pure islet tissue from the angler (Lophius) and the sculpin (Myoxocephalus). He was able to prepare very potent extracts from this special tissue, whereas he found extracts of the zymogenous tissue of the same fishes to be quite inert. Macleod has, therefore, definitely established that islet tissue is the source of insulin. He found also that the pancreas of cartilagenous fishes, which quite resembles the mammalian pancreas, yields very potent extracts. This observation I have recently confirmed for the pancreas of the dog fish of the Pacific Coast.

The writer very early in his investigations on this problem conceived the idea that wherever glycogen occurred, insulin or an insulin-like hormone would not be far distant. He, therefore, made extracts of clam tissue[33] which is rich in glycogen and found them to be potent, altho the results would not indicate that the clam was a practical source of insulin. The further idea that there might be some fundamental similarity between certain phases of sugar metabolism in the plant and animal kingdom, such as the polymerization of glucose to glycogen in the animal and to starch in the plant, and the actual combustion of glucose in the protoplasmic fires of both plant and animal, was also put to the test. Yeast on account of its high glycogen content was the first plant tissue used. After numerous failures, extracts of yeast were finally obtained in January, 1923[34], which, when administered to both normal and diabetic animals, caused a marked reduction in the percentage of blood sugar. Winter and Smith[35] independently obtained somewhat similar results with yeast.

The writer[34] has recently prepared extracts from the tissues (both root and leaf) of a variety of the higher plants which produce a decided lowering of the blood sugar of both normal and diabetic animals. A depancreatized dog has been kept alive 66 days with three injections of onion extract[36]. Whether this principle of plant origin will be useful ultimately in the treatment of diabetes in the human subject remains to be seen. The effects of the plant principle which has been called "glucokinin" are in a general way quite different from the effects of insulin. Marked hypoglycemia may not develop till days after the administration of glucokinin. Very recently[36] the writer has prepared a serum from glucokinin injected animals which has properties somewhat similar to glucokinin. This serum can be obtained in unlimited amount by animal passage.

The writer[37] has shown that acetone bodies may be found in the urine of normal animals which have a very low level of blood sugar. The CO_2 content of the blood of such animals may also be considerably reduced. These observations suggest that a condition of acute acidosis is produced when the level of blood sugar is very low. Recently the writer has found acetone bodies in the urine of a diabetic patient who was ketone free on insulin therapy but who, failing to eat his meal following an injection of insulin, passed into absolute coma and showed a blood sugar of .028 per cent before he was resuscitated by glucose administration. The writer[38] has also prepared pancreatic extracts which when injected into normal animals do not produce hypoglycemia until a day or more has elapsed after the injection.

Winter and Smith[39] have shown that the sugar of normal blood is in all probability not the ordinary glucose but some very reactive form which they suggest may be gamma glucose. This reactive type of glucose has a low rotary power and Winter and Smith have detected an actual change in the rotary power of certain sugar solutions in the presence of insulin and liver extract. Their work, while not absolutely proving ,at least suggests that the primary action of insulin is to produce a reactive form of sugar in the blood. Further evidence supporting this hypothesis has also been furnished by these investigators. They have found that the blood sugar of a diabetic patient is not of the same type as that of a normal individual and they have also shown that, while the administration of insulin to a diabetic subject causes an actual fall in the percentage amount of blood sugar, there is an absolute rise in the amount of their reactive sugar as determined by physical methods of examination.

Recent observations by Dudley and Laidlaw[40], by Trevan and Booch[41] and by Kellaway and Hughes[42] on the effect of insulin on the normal human subject are of interest. The results of these investigators show that the primary effect of the administration of insulin to a normal adult is to increase the respiratory quotient. There is no increased metabolism, however, as might have been expected. Dale[43] has made the suggestion that the probable effect of an excessive amount of insulin in the blood stream is the very antithesis of the diabetic state, namely, that instead of sugar combustion being interfered with, sugar metabolism becomes paramount to the exclusion of other types of food combustion.

Dudley[28] has found that glycogen disappears from both liver and muscles of normal animals at the same time that sugar disappears from the blood under the influence of insulin. This, I can in part (liver glycogen) confirm.

Burn[44] has recently shown that there is a direct antagonism between the hormone of the posterior lobe of the pituitary body and insulin.

Clinical investigations of the effects of insulin on the diabetic subject have, as it were, outstripped the laboratory investigations. Insulin therapy has now been successfully employed in many centres in Canada, Great Britain and the United States, as well as to a less extent in other countries. The clinical results in these various places have been in remarkable accord. It has been shown in the first instance that diabetic individuals in practically any stage of the disease from the mildest type to the comatose state can be restored to normal by adequate dosage of insulin, together with a scientifically controlled diet. The primary effect of insulin on a diabetic subject is to abolish acidosis and ketosis, to lower the level of blood sugar and to decrease the output of urinary sugar. If by adequate dosage and careful dieting the blood sugar is kept within normal limits, the patient will be aglycosuric.

The adequate dosage of insulin for any special case is determined by two factors: (1) the carbohydrate tolerance of the patient, (2) the carbohydrate intake in the diet (including glucose formed from protein and fat as well as actual starchy foods).

While the actual assay of insulin preparations on the market is made by noting the effectiveness of the product in lowering the blood sugar of normal rabbits to the critical level (convulsions), the most satisfactory assay is made on the patient. One rabbit unit of insulin will take care of a definite amount of glucose in the individual patient. This amount varies but is as a rule approximately 1 gram.

The patient, who can be kept sugar-free on a well balanced diet of low caloric value, can be still kept sugar-free on a balanced diet of much higher caloric value, if insulin sufficient to handle the additional glucose is supplied by injection. Such patients should show considerable gain in weight. The patient with little or no carbohydrate tolerance can similarly be put on a balanced diet of sufficient caloric value not only to allow for maintenance but also for growth.

The coma case is probably the most startling demonstration of the potency of insulin. Patients admitted in coma should be given at once an heroic dose of insulin, together with glucose by stomach or intravenously. Hypoglycemic symptoms are to be watched for and guarded against, but it is of paramount importance to get the patient out of coma as quickly as possible. The standard type of treatment can then be applied in these cases with the same success as in the non-coma type. Patients with diabetic gangrene or abscesses can likewise be gotten in shape for operation by the proper use of insulin.

A fact of great importance is that in certain cases the natural carbohydrate tolerance is gradually increased under insulin therapy with the result that the dosage may be increased or in some cases the insulin may actually be withdrawn.

A very important practical point in the use of insulin is the ever present danger of an overdose. Diabetic individuals react to an overdose of insulin in much the same way as normal rabbits. Banting, Campbell and Fletcher[45] have described hypoglycemia in the diabetic and a certain number of such cases have probably been seen in almost every clinic where insulin has been used. The effectiveness of the antidote glucose or even other sugars is such, however, that no fatalities should be encountered, if the condition is recognized early and adequate measures taken at once to overcome what would otherwise be a fatal issue.

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MODERN ADVANCES IN THE TREATMENT OF DIABETES MELLITUS

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HISTORIC INTRODUCTION

The pancreatic gland has a highly specialized function, which was first demonstrated by Lapine in 1892, three years after the historic work of Menkowski and Von Mering.

This work has been repeatedly demonstrated in the physiologic laboratories by removing the pancreatic glands of dogs, which dogs developed classic symptoms of changed metabolism, characterized by an inability to metabolize carbohydrate.

THE ENDOCRINE FUNCTION OF THE PANCREAS

"So far as we know, the endocrine function of the pancreas has to do solely with the dissociation of glucose, thru which form all carbohydrates utilized in the body must pass.

"There is some evidence for believing that the pancreas is stimulated to activity by the presence of glucose in the effort to dispose of the glucose. Could it not be, then, that a weakened organ, in the presence of constant demands for the disposition of glucose, might be relieved of its responsibility and be put at rest, in the hope that thru this period of rest this same organ might recuperate so as to function more adequately?"

MEANS OF ACCOMPLISHMENT

To lessen the work of the pancreas we must diminish the quantity of glucose entering the body, and to accomplish this properly we must know two things: First, the composition of the food entering the body; second, how that food is disposed of when once it has entered the body.

The first requisite has been met by those students of dietetics who have given us as physicians tables which tell us accurately the carbohydrate, protein and fat content of food.

The second requisite we as physicians must investigate for ourselves, for we know that before carbohydrate, protein and fat are offered to the body for transmission into energy they must undergo considerable change. These substances are resolved by the process of digestion and metabolism into simpler substances before they can be burned in the tissues.

"It is not the carbohydrate in the diet which taxes the endocrine function of the pancreas, but the glucose into which the carbohydrate is resolved."

WOODYATT'S INTERPRETATION OF THE TRANSFORMATION OF CARBOHYDRATE, PROTEIN AND FAT

"As carbohydrates enter the body all that are not already in the form of glucose are transformed into this substance before they are utilized in the body. We may say, then, that if 100 grams of carbohydrate are in the diet, and that if all is digested and absorbed, there will be placed into the metabolic processes of the organism 100 grams of glucose.

'Neutral fats may be absorbed as such, but before they can be oxidized and used as sources of energy they must first be saponified into glycerol and higher fatty acid. Glycerol is converted into glucose almost gram for gram, and the fats, when completely saponified, yield 10 parts of glycerol and 90 parts of higher fatty acid. For clinical purposes we may say that 100 grams of mixed fat in the diet, if completely absorbed, will yield 10 grams of glucose and 90 grams of higher fatty acid.

"The protein of the diet ceases to be protein, and is resolved into amino acids, which must be deaminized and oxidized to yield oxi- and hydroxi-acids. Of these acids, part is converted into glucose; another part into beta-hydroxi-butyric acids; and a third small portion is destroyed in an unknown manner."

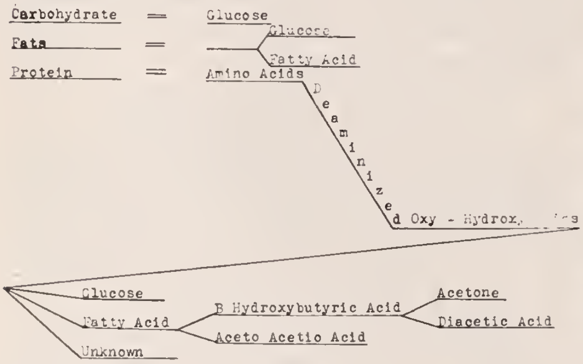

Fig. 1

"For clinical purposes it is estimated that 100 grams of protein in the diet will, after digestion and assimilation, yield 58 grams of glucose and 46 (?) grams of fat. 100 grams of carbohydrates will yield 100 grams of glucose."

MANNER OF ACCOMPLISHMENT

With the foregoing work as a premise, an effort was made to make a pancreatic extract from the glands of cattle, procured from a local abattoir, and treated by the method outlined by Dr. Collip. An extract was obtained which lowered the blood sugar of a rabbit, according to the specifications outlined by Banting and Best. This extract was then applied to individuals with the results that are graphically illustrated in the following charts:

The individual was hospitalized for two days time to determine the height of his sugar tolerance. At the end of this period he was put on a Newburgh and Marsh diet, which was low in carbohydrates, and the administration of pancreatic extract was immediately begun.

A graphic chart was used to record the laboratory findings. The diet was outlined carefully and each day quantitative determinations of sugar in the urine were run. These readings were recorded graphically, and aid one to visualize a bit more readily what is occurring in the metabolic processes of the individual.

EXPLANATION OF GRAPHIC CHART

One millimeter-graph paper was used to make the charts presented below. The column to the left on the graphic chart represents grams. The lower line was made by recording each day the reading obtained from the quantitative determination of sugar in the urine. The upper line was obtained by recording the total amount of glucose in the diet according to the method of Woodyat. The notes regarding treatment with pancreatic extract are self explanatory. A note was made when the pancreatic extract was begun, and another when it was stopped. The dosage of pancreatic extract varied, but usually it began with 3 or 4 c.c. a day and ended with half a c.c. a day.

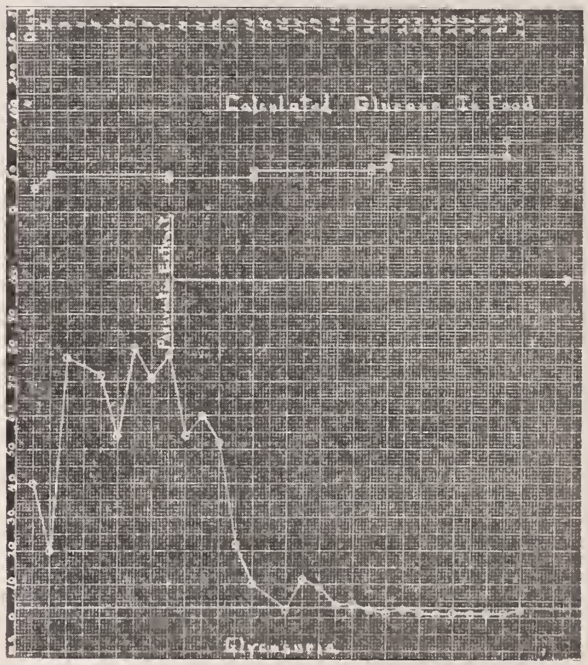

Fig. 2

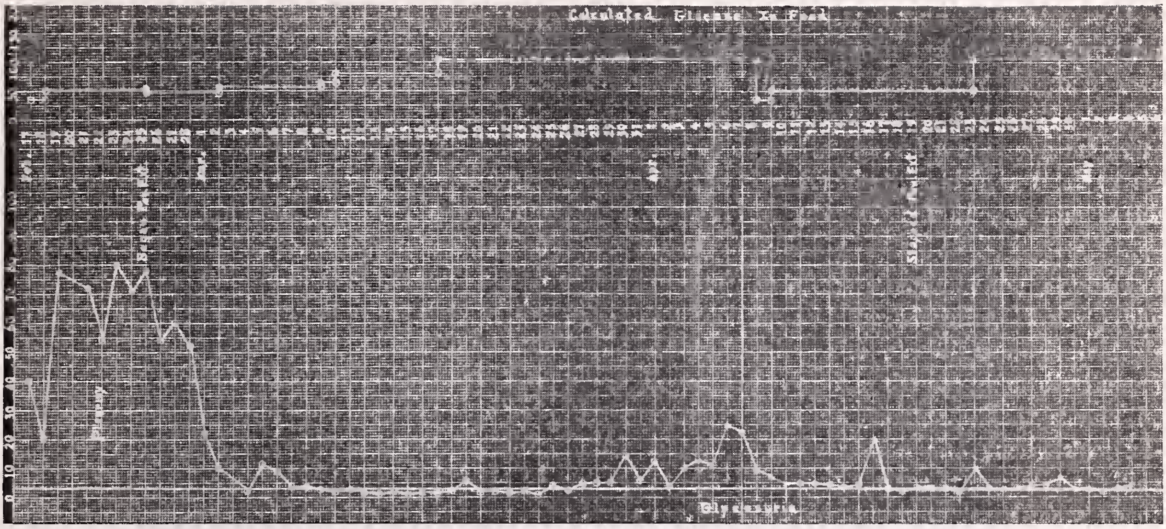

Fig. 3

Figure 2 illustrates the rapid drop of the sugar output which follows immediately the administration of pancreatic extract. These drops in the sugar output could have been made much more rapidly had larger doses of pancreatic extract been administered, but it seemed wiser to obtain the results over a period of three or four days rather than trying to accomplish it over night.

Figure 3 serves to illustrate the results of treatment over a period of two and one-half months.

The initial accomplishment was striking. Then one notices during the first week of April a slight rise in the urinary output of sugar. Upon investigation, at the end of this week's rising sugar output, the patient confessed that he had been lunching with business men at the noon hour, and had not been adhering to his diet.

The three successive rises are each due to similar It would seem from a study of this in-offenses. dividual's chart, that his permanent elimination of symptoms of diabetes is entirely dependent upon his will to control his desire for unnecessary food. His present caloric intake is 1827 calories, and his weight has progressed from 128 to 137 pounds.

There is another factor of interest illustrated by this chart. In the initial stages it will be noted that the patient was suffering from pleurisy. The day after his initial examination he came to the office and complained of a severe pain in his side. His temperature was 101 degrees. There was dullness to percussion of the left base from the 8th to the 10th ribs, and there was a distinct friction rub on ausculation.

It has been observed in several individuals who have been running a smooth course, that if they develop a mild infection, such as coryza, their urinary sugar output will increase. Should this individual, who at the present time is running a smooth course without use of pancreatic extract, develop an acute infection, he would be in grave danger again, and it would be in this emergency that the use of pancreatic extract would be most effective.

Mention may be made at this point of a case suffering from appendiceal abscess who, upon his admission to the hospital, showed a percentage of sugar in his urine of six. The surgeons who had him in charge did not feel that it was safe for him to undergo an operative procedure, and they asked that pancreatic extract be administered to improve his condition.

Pancreatic extract was administered over a period of four days time, and the patient was put on a Newburgh and Marsh diet. At the end of the fourth day he was sugar free, and on that evening was taken to the operating room and 600 c.c. of pus removed from a tremendous appendiceal abscess. The recovery was uneventful, and the patient is now sugar free on an unlimited, moderate diet.

Figure 4 serves to illustrate what the individual will do after the cessation of the administration of pancreatic extract. This individual responded very readily to treatment and ran an uneventful course. His cooperation was religious, and when we see that for twenty-four days the condition has remained unchanged, it would seem reasonable if we assumed that, just as long as this individual remains upon his dietary regime as outlined, he will be free from the symptoms of diabetes mellitus, unless some intercurrent acute infection should increase his met-

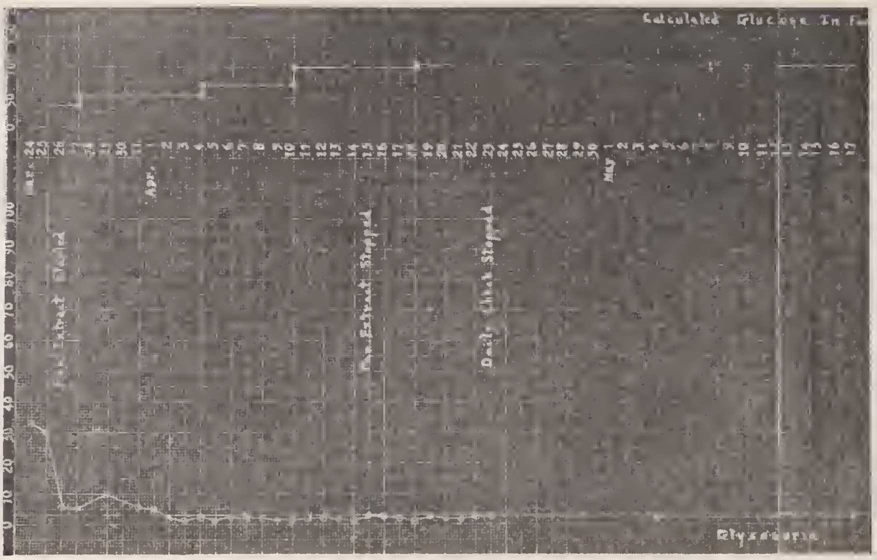

Fig. 4

abolic burden and cause him to again develop an hyperglycemia. If this should develop in such an individual, we have at our disposal an extract which may be administered over this acute period, and diminish the possibility of the development of an acidosis or coma.

It will be seen at a glance that figure 5 differs very markedly from those which have been presented before. This individual was under the impression that he was suffering from diabetes mellitus.

The patient is a man of 60 years of age, who has followed a literary career; his habits have been sedentary. He has enjoyed the hours at the table extremely, and has indulged freely in the partaking of food. In his earlier life he was most free in partaking of liquor.

This man is obese, and he complains of pain in his extremities, particularly in the big toe of his right foot, which pain comes on at night and awakens him out of his sleep, causing several hours of distress. The joints of his body are enlarged in both hands and feet. The interosseous muscles of the dorsal aspect of his hands are atrophied. He has no tophy in his ears, but his blood shows a normal blood sugar, and a slight rise in the uric acid content. And, even tho he shows a transient glycosuria of a mild degree, he is not a case of diabetes mellitus. He is a case of gout.

It cannot be expected in such a case that the administration of pancreatic extract to render his sugar output normal can relieve his symptoms of gout, for his changed metabolism is not primarily that of an inability to metabolize glucose.

As the cases of diabetes mellitus have been studied, it seems that they will logically fall into three groups.

The first group will be that type of individuals who need only a revision of their dietary regime to render their urine and blood normal, and to enable them to obtain the proper amount of calories for their needs.

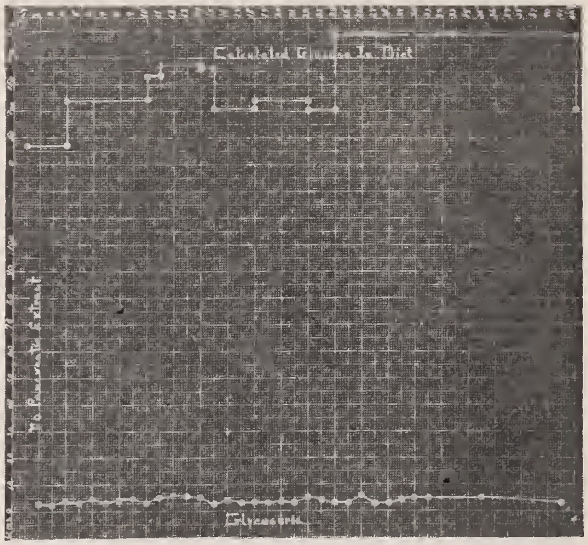

Fig. 5

The second group of individuals will be those, in whom one cannot accomplish by means of diet alone freedom from glycosuria and hyperglycemia, and in whom the administration of pancreatic extract over a short period of time will increase the capacity of the pancreas to metabolize glucose sufficiently to enable them to metabolize enough food for their energy requirements.

The third group will be that in which the pathology of the pancreas is such that so many of the Islands of Langerhans will have been destroyed that their future means a constant resort to some artificial means to enable them to metabolize glucose.

SUMMARY

1. A suitable approach to the treatment of diabetes mellitus is that outlined by Dr. Woodyatt.
2. Acute infections in cases of diabetes mellitus increase the sugar output.
3. Diligence in following dietary regime is essential in the treatment of diabetes mellitus.
4. Constant administration of pancreatic extract is not necessary in all cases of diabetes mellitus.
5. Cases of gout may present a glycosuria.

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AUTHOR'S NOTE

Early in the month of September it was called to the author's attention that several investigators in the country were engaged in making historic advances in the treatment of diabetes mellitus.

In an effort to get an intimate knowledge of what these men were doing, the author made a trip thru the East, to formulate a working basis for the application of recent advances in the treatment of diabetes mellitus from a practitioner's standpoint. Not only was this effort made, but the literature available was reviewed. With the help of the literature and of numerous men in the cities of New York, Boston, Baltimore and Los Angeles, this paper was made possible.

The author has quoted freely from the authorities mentioned in the bibliography, and hopes that this little effort of summarizing will stimulate someone to develop more intensively in his locality those principles of practice which the research men of this country have given to us, and which many struggling individuals are in great need of, to enable them to wage more successfully their economic struggle in life.

INSULIN THERAPY IN THE PROGRESSIVE DOWNWARD TYPE OF DIABETES.

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As this is being written, it is my understanding that a welcome deluge of material is being prepared and made ready for publication concerning the use of insulin in the treatment of diabetes. The ground will be so thoroly covered by men whose very names are synonomous with diabetes, so thoroly have they made it their study and so much have they offered the medical profession in their publications, that it is felt only some unusual case or class of cases should be presented in this article.

With this in mind, there will herein be discussed a case representing a certain class of diabetes, which offers difficulties and problems, not met in the general type of the disease. Affording almost and at times insurmountable difficulties and problems under even the newer regimes of diabetic dietetics of the last ten, and especially the last three or four years, they are again presenting unusual and new problems in insulin therapy.

An opportunity for regeneration of the islands of Langerhans is not afforded, for the glucose tolerance is so low that, before even a maintenance diet can be reached, glycosuria again appears. And even in those cases in which the lowest caloric diet capable of sustaining life is reached, the strain placed upon the pancreas is so great, and the line of demarcation between sugar tolerance and intolerance so narrow, that even a very slightly further degeneration of the islets is sufficient to again cause hyperglycemia and glycosuria.

Once the tolerance is broken, the degeneration slowly at first and then more and more rapidly manifests itself, much as a large boulder teetering upon the top of a mountain starts slowly to fall, rapidly and still more rapidly gains momentum in its descent.

These, then, are the cases which have been placed under the classification of the "progressive downward type of diabetes," a classification whose title, tho criticised by some, is extremely expressive of the condition. Regeneration is impossible, for the patient cannot live on a diet that will offer enough rest for the special cells of the pancreas to afford them an opportunity of regeneration and each successive break in the glucose tolerance causes a further degeneration of the further lowered tolerance, until the oft times inevitable end.

This paper will deal with these difficulties as encountered with insulin therapy, endeavoring to show by a detailed and chronologic report of a typical case, the obstacles encountered, the mistakes and lessons therefrom, and the determination and time of administration of increasing doses of insulin in the race against a continued decreasing sugar tolerance, until finally the subject became not only sugar-free, but gained in weight without deviation from a normal blood sugar content.

This patient is a married white female of 155 c. m. in height and 45 kilograms in weight. The family, social and past history will only be mentioned in stating that no data therein play a part in her present condition.

No attempt will be made to appropriate unnecessary time and space in discussing the physical examination. A thoro examination with the necessary adjunct laboratory work yielded nothing except features salient to the disease, for which she presented herself for treatment.

It is also needless to state that the possibilities of former or present pyogenic or luetic infection were not overlooked. Well developed and to the time of her disease well nourished, the patient may be catalogued as that type of American girl whose surroundings have always been ideal and who has had and taken the opportunity of living a healthful and hygienic life.

Her present complaint apparently antedated its discovery by a period of a few weeks. During this time she commenced to complain of increasing polyuria, polyphagia and polydipsia. Nearing the end of this time these symptoms, together with the beginning asthenia, so rapidly increased, that becoming alarmed, she consulted a physician about December 20, 1922, who upon examination stated that she had diabetes and placed her upon an alimentary starvation regime.

After five weeks of hospitalization, her carbohydrate tolerance proved too low for maintenance and she was referred to a second physician who placed her in bed on a low caloric diet and insulin treatment. At the end of the second week in bed, she became sugar free and remained so for one week. An attempt was then made to place her on a better balanced and higher caloric ration, with the result that sugar again appeared in the urine and, tho generally clearing up the latter part of the afternoon and evening, was constantly found in the urine before and for some hours after the morning meal. After two or three weeks of this, during which time she was on a diet of carbohydrate 45. protein 32, and fat 118, and receiving 20 units of insulin in the morning and 10 at noon and in the evening, she was placed in my hadns for further treatment.

The urinary sugar had gradually been increasing, 1.2 per cent or 7.22 grams being excreted the first twenty-four hours that she was under my observation. The blood sugar estimation made immediately before her noon-day meal of this date was found to be 1.8 per cent.

The determination of her diet was based on a ratio of glucose 1 to 1.5 fat and she was given .73 grams of protein per kilogram of weight, the total caloric value of food allowed her 32 calories per kilogram of body weight, the diet in total being carbohydrate 54, protein 33 and fat 123, and divided equally into three meals.

She was instructed to eat regularly at 8 a. m., 1 p. m. and 6 p. m. She was further instructed to make routine examinations of the urine half an hour before each meal and one hour and a half after finishing the meal. Her doses of insulin were given at this period of her treatment immediately preceding each meal.

Blood for her routine estimations of sugar was obtained daily at 12:45 p. m., and two and a half hours after the one o'clock dose of insulin. Beside this, other urinary tests for sugar were made at various times and later on the time for estimating the blood sugar was changed, in order to obtain the percentage at various times after the administration of insulin.

The number of grams of sugar excreted in the urine on her former diet, together with the additional grams of glucose in her new diet, totalled about 17 additional grams of glucose to be utilized before her blood sugar content and urinary findings could be expected to be normal.

Because of the likelihood at that time of discrepancy in the uniformity of different lots of insulin, and with the idea of better approaching a proper dose of this substance from below rather than above the necessary dose, I instructed her for the first day, to take ten units of insulin before each meal.

As it is felt that a clearer picture may be obtained than with the use of charts for demonstration, the behaviour of the patient from now on, together with the blood and urinary findings, her treatment and time of treatment, will be set down daily and in chronologic order. This will also afford an opportunity of discussing at the same time any pertinent occurrences of the day.

First day: Insulin dosage ten units immediately preceding each meal. Sugar present in urine one-half hour before breakfast and an increased amount one and one-half hours after this meal. Urine sugar free shortly before lunch. Twenty-four hour excretion of sugar one per cent. Blood sugar estimation at 12:45 p. m. was .163 and at 3:30 p. m., or two and one-half hours after the administration of insulin, .13.

From now on examination of blood and urine will be spoken of as occurring before or after meals and the time of examination will conform with the times just stated, unless otherwise specifically mentioned.

Remarks: Despite the fact that she received less units than the total number of the previous day, the patient showed a slight decrease in both blood and urinary findings. This may have been due to a difference in the insulin, a better balanced diet or both.

Second day: Insulin dosage, 15-10-5 units. Urinary sugar found before and after breakfast, clearing up at 12:30 p. m. Blood sugar estimations, .135 and .05.

Remarks: About one hour after the noon meal, she experienced a slight reaction, which was dissipated after eating a large orange. As the mid-day injection of ten units of insulin caused a reaction in the afternoon, the evening dose was reduced to five units. My experience in the use of insulin in usual cases determined this as the logical procedure, but notwithstanding that the urine remained clear all day and evening from 12:30 p. m. and that she experienced a reaction in the afternoon, sugar was found in the urine the following morning.

Third day: Insulin dosage, 20-10-5 units. Sugar in urine before breakfast, increased amount after breakfast and a slight amount at 12:30 p. m., clearing up entirely a few minutes before the noon meal. Blood sugar estimations, .16 and .112.

Remarks: Because of the presence of sugar early in the morning, the dose of insulin was increased to twenty units. Notwithstanding this, more sugar appeared in the urine after breakfast and remained for a longer length of time than on the previous day. As, however, it had cleared up by lunch time, she was given the same dose of insulin at noon as formally. The urine remained clear all afternoon and her blood sugar dropped to .12. This, together with the fact that she had experienced a reaction the day previous, seemed to indicate that the evening dose should not be increased over the amount administered the night before. The urine remained clear until the following morning. Despite this, she experienced a slight reaction in the evening at 11 p. m., but did not feel compelled to take any steps to prevent it.

Fourth day: Insulin dosage, 14-8-8 units. Sugar in urine before and after breakfast, clearing up entirely at 12 m. Blood sugar estimations, .145 and .11.

Remarks: Due to the presence of reactions the latter part of the day and of the evening, and the demonstration of sugar in the urine before breakfast, it was thought wise to more equally divide the doses of insulin, in order that she might receive a larger dose in the evening. This was done with the hope that the usual morning glycosuria might be prevented. However, the usual amount of sugar was found in the urine the following morning.

Fifth day: Insulin dosage 14-10-12 units. Sugar in the urine before and after breakfast and did not disappear until 12:45 p. m. Blood sugar estimations .16 and .14.

Remarks: Attention is again directly called to the fact that, after the urine once became clear of sugar at about noon, it did not reappear on any of these days to follow until the next morning. No reaction was experienced this day.

Sixth day: Insulin dosage, 14-12-12 units. Sugar in the urine before and after breakfast, clearing up the same hour as of the previous day. Blood sugar estimations, .15 and .13.

Remarks: The evening dose was not increased, due to the additional units given at 1 p. m. and to the experience gained from other cases that reactions most commonly made their appearance after the night dose.

Seventh day: Insulin dosage unchanged, 14-12-12 units. Sugar in urine before and after breakfast, clearing up about 12:30 p. m. Blood sugar estimations, .13 and .11.

Remarks: On each of the days quoted so far, the excretion of sugar in the urine remained around one per cent. The variation was so slight that it has not been deemed necessary to more than mention it. This excretion of sugar in the urine occurred only in the morning hours.

Eighth day: Insulin dosage unchanged, 14-12-12 units. Twenty-four hour excretion of sugar in urine .9 per cent. Sugar found in urine before and after breakfast, clearing up at 12 m. Blood sugar estimations, .125 and .11.

Remarks: This day there was less sugar in the urine before breakfast and it was hoped that the excretion of sugar was coming under control. At midnight, she experienced a slight reaction. No food was eaten.

Ninth day: Insulin dosage, 14-12-10 units. A very slight trace of sugar was found in the urine before breakfast. Sugar after breakfast, clearing up about 12 m. Total urinary excretion of sugar .086. Blood sugar estimations, .15 and .105.

Remarks: Because of the reaction experienced the night before, ten instead of twelve units was administered as the evening dose.

Tenth day: Insulin dosage, 14-12-10 units. A small quantity of sugar, tho a little heavier than the preceding morning, was found before breakfast. That found after breakfast was a little heavier than the corresponding time of the day previous. There was still a slight trace at 12:15 p. m., which had cleared up entirely at 1 p. m. Blood sugar estimations, .232 and .172.

Remarks: The amount of blood sugar in the first estimation can hardly be reconciled with the fact that there was but a slight trace of sugar in the urine, nor the amount found in the second estimation with the fact that no sugar was discovered in the urine at this time. There is always the possibility of error in any human action, and tho the most scrupulous attention is given to our laboratory work and the keeping of records, it is possible that an error may have been made in the recording of the blood sugar estimation of this day, or that the findings from some other patient were substituted for this one. I cannot think of any other explanation. She again evinced a slight reaction three hours after the evening dose.

Eleventh day: Insulin dosage, 16-14-8 units. Sugar was found in the urine before and after breakfast, clearing up at noon. Total excretion of urinary sugar for this day was .48. Blood sugar estimations .16 and .105.

Remarks: As my previous experience with other patients had been that less insulin was necessary for the evening dose, coupled with the fact that this patient experienced a reaction at night but sugar reappeared the following morning, I here started to lower the night dosage and increase that given in the morning and at noon. This, tho a logical deduction, was an error in this type of case. As will be seen later, a different plan was necessary to control the hyperglycemia and glycosuria.

Twelfth day: Insulin dosage unchanged, 16-14-8 units. Sugar in the urine before and after breaknot clearing up until 1 p. m. Total urinary secretion amount of sugar for this day, however, increased to .73. Blood sugar estimations, .154 and .094.

Remarks: The only explanation given for the apparent discrepancies in the total amount of sugar for twenty-four hours, despite the increased dosage of insulin, is, when sugar once started to appear in the urine, the tolerance for that time was broken to a varying degree and different amounts were excreted during the period in which the sugar was reappearing.

Thirteenth day: Insulin dosage, 20-18-8 units. Sugar present in the urine before and after breakfast, not clearing up until 1 p. m. Total urinary secretion of sugar .96 per cent. Blood sugar estimation at 12:30 p. m., fifteen minutes before the usual time before lunch, was .148.

Remarks: The dosage of insulin was increased in the morning because of the constant presence of sugar at this time of day and the dose at mid-day was increased because of the higher blood sugar content at 12:30 p. m. This fell two hours after lunch to the upper maximum normal limits. Becoming free of urinary sugar at 1 p. m. and bearing in mind the previous evening reactions, the evening dose of insulin was not raised.

This also was partly due to the fact that I had not realized the true status of the case and that I was still timid of producing severe reactions. I do not dread the possibility of these reactions as much now, for alarming reactions will not occur, if the dosage of insulin is regulated by blood sugar estimation and urinary tests made at the proper time.

By this time it will be noted that there apparently seems to be a race between a continued progressive downward break in the tolerance for glucose and increasing amounts of insulin given. So far the race has been in favor of the breaking tolerance, the dosage of insulin, tho being directed in the proper direction, has not been increased in sufficient amounts, nor at the proper time of day for this particular patient in order to overtake and control this continual loss of tolerance.

The patient not only belongs to the "progressive downward type," but by this time it is fairly evident that the effect of insulin is much more lasting than in the usual one.

Fourteenth day: Insulin dosage, 23-16-6 units. Sugar in urine before and after breakfast, tho it disappeared earlier in the morning than at any time previously. Twenty-four hour excretion of sugar was .85. Blood sugar estimations, .133 and .083.

Remarks: Sugar is disappearing from the urine at an earlier hour than previously. Due to this fact, and that her blood sugar was within normal limits, but sixteen units of insulin was given. She experienced a slight reaction. Accordingly, her evening dose was dropped to six units.

Fifteenth day: Insulin dosage, 24-16-6 units. Sugar in the urine before and after breakfast. Blood sugar estimations, .125 and .08.

Remarks: She experienced a slight reaction in the evening. One of the problems presenting itself can now be readily seen. **It was impossible to give her large enough doses in the evening to control the sugar output the following morning, as she experienced a reaction as soon as this was attempted.** The solution of this problem did not occur to me until a few day further on, or the 20th day of treatment.

Sixteenth day: Insulin dosage, 24-16-4 units. Sugar in urine before and after breakfast, clearing up at 12 m. Blood sugar estimations, .09 and .087.

Remarks: Because of the low blood sugar and the reaction of the previous evening, the evening dose was reduced to four units.

Seventeenth day: Insulin dosage unchanged, 24-16-4 units. Same urinary findings. Sugar output for this day was .38 per cent. Blood sugar estimations, .1 and .057.

Remarks: Slight reaction experienced in the evening.

Eighteenth day: Insulin dosage, 30-16-4 units. Urinary findings practically the same. Blood sugar estimations, .064 and .057.

Remarks: A slight reaction was experienced in the evening.

Nineteenth day: Insulin dosage, 35-16-3 units. Urinary findings the same. Blood sugar estimations, .11 and .10.

Remarks: Again apparently a beginning break in the tolerance with the continued use of 16 units at 1 p. m. Note the difference between the blood sugar findings of the two days.

Twentieth day: Insulin dosage unchanged, 35-16-3. Sugar in urine before and after breakfast and more sugar found at 10 a. m. than at the same time of day preceding. Blood sugar estimations, .128 and .12.

It is quite evident that we have an increasing lowered resistance to sugar tolerance which advances rapidly enough to keep slightly ahead of the increasing doses of insulin.

I think at this stage of the treatment I first fully realized that, tho increasing my doses of insulin, I was not increasing them rapidly enough, nor in sufficient amounts, nor probably at the best period of the day.

Had I arrived at this determination sooner it is possible that I could have earlier controlled the hyperglycemia and glycosuria, given the pancreas a chance to recuperate and avoided the very large doses now necessary to bring about proper glucose metabolism.

The increasing amounts of insulin administered had not been keeping pace with the downward progression of the disease.

Unfortunately, at this time 1800 units of my insulin had gone astray en route, and tho able to borrow a small amount, did not feel that I could afford to rob other patients in order to greatly increase this one's dose of insulin. Accordingly I left her on a dosage of forty units per morning, sixteen at noon and three in the evening. I had instructed her to take the morning dose, however, at increasing intervals before breakfast, until she was finally receiving it forty-five minutes before this meal.

Both blood and urinary sugar decreased slightly for a time, then gradually increasing amounts of sugar were perceptible in both before and after breakfast tests, tho as formerly sugar in the urine was not demonstrable after 1 p. m.

Eight days elapsed before enough insulin was secured to protect my other patients and warrant the large doses that I could now see would be necessary to use in this case.

The noon and afternoon blood sugars had increased in amount until .2 per cent blood sugar was found at noon and by mid-afternoon was reaching a point barely within the upper maximum limits.

Twenty-eighth day: Insulin dosage, 50-12-3 units. Sugar in urine before and after breakfast in much greater quantities than eight days previous. Twenty-four hour excretion 1.6. Blood sugar estimations, .185 and .071.

Remarks: Slight reaction latter part of afternoon. Including this day and from now on the morning dose of insulin was given one hour before the morning meal.

Twenty-ninth day: Insulin dosage, 60-10-3 units. Sugar present in urine before and after breakfast, tho absent by noon. Twenty-four hour excretion of sugar 1.3. Blood sugar at 10 a. m., .18 and at 3:30 p. m., .071.

Remarks: Note reduction in noon dose, which was made because of the reaction experienced the previous afternoon. This began to point the way to a better adjustment of time of dosage.

Thirtieth day: Insulin dosage, 70-8-3 units. Less sugar in urine before and after breakfast. Blood sugar estimation at 10 a. m., .12 and at 12:30 p. m., .057.

Remarks: Again experienced a slight reaction in afternoon, somewhat severer than the previous day. I now decided to do what I should have probably tried earlier, omit the noon day insulin and combine it with the evening dose.

Thirty-first day: Insulin dosage: 80-0-10 units. A smaller amount of sugar was found than usual before breakfast and a small amount of sugar after breakfast. The sugar cleared up by 12 m. and as usual was absent the entire day and evening. Blood sugar estimation at 10 a. m., .123 and at 3:30 p. m., .065.

Remarks: Full effects of this day's dosage naturally would not be noted until the day to follow.

Thirty-second day: Insulin dosage: 80-0-20 units. Very slight trace of sugar found in the urine before breakfast and less found after breakfast than on the previous morning. Total secretion of sugar for this entire day was .1 per cent. Blood sugar estimation at 10 a. m., .124 and at 3:30 p. m., .066. Full effects of this day's dosage will also be seen on the day to follow.

Thirty-third day: Insulin dosage, 70-0-30. No sugar before breakfast and an extremely slight trace after breakfast. Sugar disappeared shortly after eleven o'clock. Blood sugar estimation at 10:30 a. m., .11 and at 3:30 p. m., .06.

Remarks: Due to increase in the evening dose and with the hope of finding it possible to approach a more equitable division of the day's insulin, the morning dose was dropped 10 units. Notwithstanding this morning reduction in dose, reaction commenced about 10:30 p. m. and was quite severe at 1:30 a. m.

Thirty-fourth day: Insulin dosage, 70-0-25 units. No sugar was found in the urine at any time this day. Blood estimation at 10 a. m., .055; 1 p. m., .057 and 4 p. m., .055.

Remarks: This is the first day the patient has failed to show a hyperglycemia or glycosuria at some time during the twenty-four hours. She experienced a marked reaction at 1 p. m., which was immediately dissipated upon her eating lunch. During the last two or three days she has gained about 1250 grams, so that her weight at present is the same as at the time of starting treatment and diet. She lost about 30 to 50 grams a day.

Thirty-fifth day: Insulin dosage, 65-0-25 units. Urinary and blood findings normal.

Remarks: Upon this dosage she has kept free from all symptoms, is gaining slightly in weight and is devoid of reaction.

Three weeks later: Patient's dosage has been reduced to 22½ units in the evening and 47½ in the morning. During this period no sugar has been noted in the urine at any time.

COMMENTS

Much that is generally discussed under this heading, has already been treated under "remarks" appearing in the chronologic history of the day's happenings. It may, however, not be amiss to emphasize some of the facts and lessons learned.

1. With insulin therapy, as well as in the other methods of treating diabetes, it must not be forgotten that there is a type of diabetic who shows a constant tendency toward a continued lowering of a glucose tolerance.
2. For this type a golden dawn of reality, not promise, for existence has appeared in insulin.
3. Upon recognition of this type of the disease insulin must not only be given in larger doses than that administered to the ordinary case, but these doses must be much more sharply and rapidly increased, in order to quickly establish tolerance and prevent further progressive downward action.
4. After hyperglycemia and glycosuria are once controlled and glucose tolerance established, the amount of insulin may be decreased, tho the proper time of the different doses must be carefully determined. Witness the drop of ten units from the 32nd to the 35th day of this case.
5. In some cases a much longer time is taken for insulin to reach its maximum effect and its action persists for a much longer time than in others. In this class of patients, unlike the usual case, the noon and not the evening dose should be gradually reduced with the possibility of its eventual elimination.
6. Determination of the dose of insulin by properly timed and executed blood sugar estimation and urinary tests will obviate the necessity of fear of severe reactions. Reactions need not be expected until the blood sugar drops to around .08 and severer expressions will not be noted until a further drop of one to three-hundredths.

Additional note: In the interim of the writing and publication of this paper the dose of insulin has gradually been reduced to 40 units in the morning and 20 units for the evening dose.

THE INFLUENCE OF INSULIN ON THE TEACHING OF THE DIABETIC PATIENT

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The teaching of dietetics has always played a major role in the handling of the diabetic patient. Joslin, Allen, Woodyatt, Sansum and others have utilized the group method of instruction to prepare these patients for their subsequent management, following the establishment of their tolerance. If this method of procedure was necessary prior to the discovery of insulin, it is doubly so now. The more accurate control of the diet, the danger of hypoglycemia and the factors of diet adjustment with insulin use make it imperative to thoroly educate each patient in the fundamentals of diabetes and to school him in the practical application of dietetics.

It was our privilege to work with and watch the rapid progress made by diabetics in a large Chicago dispensary[1] during the years 1917 and 1918. These patients were for the most part foreign born with a poor speaking knowledge of English. Consequently, the teaching approached the block and picture method of the kindergarten. They were taught in groups and the food was actually prepared and weighed before them. The spirit of competition was strong. Later, early in the year of 1923, we watched a larger and more intelligent group[2], learning their lessons of food and insulin in a far more accurate way, calculating their natural tolerance and adjusting their diets to fit their individual needs an desires.

The group plan of teaching has several advantages and some few minor disadvantages. Individual instruction is practically impossible except in isolated instances. The publicity given insulin has led many untreated diabetics to seek treatment and has taxed the dietetic capacity of many hospitals and clinics, so that for economy of time these patients must necessarily be handled in classes. Moreover, the spirit of competitive learning plays an important part in stimulating the slower and less intelligent patients to exert added effort to learn, promotes better cooperation and enhances fidelity.

Ninety per cent of the teaching is necessarily concerned with dietetics. Ten per cent of the time can be well spent in dealing briefly with the etiology, pathology and pathogenesis of diabetes and the discussion of physiology of food metabolism.

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[1] Central Free Dispensary, Rush Medical College, Chicago, Ill.

[2] W. D. Sansum, Cottage Hospital, Santa Barbara, Cal.

We have patterned our plan of teaching at the Portland Medical Hospital after the method used by Sansum. Necessarily some modifications have been made but the principles of group teaching are closely adhered to.

All diabetics, whether hospitalized or treated as ambulatory patients at home, are required to attend three sessions of class work of one hour each a week during the time they are under observation. A brief outline of the teaching plan follows. The terminology used in this description is that used in talking with patients. The outline is divided into days and the approximate time spent on each subject is indicated.

First day.

The cause of diabetes.

1. The structure and function of the normal pancreas.
   (a) The Islands of Langerhans.
2. Changes in the island cells in diabetes.
   (a) Cell death.
   (b) Cel fatigue.
3. Causes of destruction of the island cells. Theories.
   (a) Infection. 90 per cent?
   (b) Heredity and overeating. 0 per cent?

Second day.

4. Blood sugar levels.
   (a) Explanation of blood sugar levels by 'bath tub' anology.
   (b) The "spilling point" of blood sugar.
   (c) Normal sugar tolerance.
   (d) Blod sugar in diabetes.
5. Probable mechanism of island cell fatigue.

Third day.

First lesson in dietetics.

1. Food elements, carbohydrate, protein and fat. Definition of each.
2. Definition of a calorie.
3. Energy requirements. The gas engine analogy.
   (a) For the fasting individual.
   (b) For the semi-invalid.
   (c) For light work.
   (d) For heavy work.
4. Protein requirements.
5. Fat requirements.

Fourth day.

1. Symptoms and their causes in diabetes. (Fifteen minutes).
2. Calculation of the sugar formers of the diet.
3. Calculation of the normal glucose tolerance.
4. Adjusting the diet to fit the tolerance.
5. Calculation of a 1000 calorie diet.
   (a) Division into meals.
   (b) Selection of the food.
6. Practical demonstration with food and scales of the preparation of a meal.
   Note. Items 2, 3, 4 and 5 consume 30 minutes. Item 6 consumes 15 minutes.

Fifth day.

1. Insulin, its source, manufacture, short history of experimental work, method of distribution and cost.
2. Practical demonstration of the technic of the injection of insulin.
3. Conditions for the use of insulin.
   (a) The exact tolerance of the patient in grams of glucose must be known.
   (b) The number of grams of sugar formers of the diet must be known.
   (c) The sugar burning power of the insulin must be known in grams.
   (d) The insulin dose may then be adjusted to make up the difference between the glucose of the present diet and the proposed diet.
4. Food values in terms of carbohydrate, protein and fat.
   Note. Item 3 is taken from W. D. Sansum's instructions to patients.

Sixth day.

1. Symptoms of too low a blood sugar. Onset, cause, course and termination.
2. Antidote.
3. Adjusting the subsequent diet and the insulin dose.
4. Dietetics. (20 minutes.)
   (a) Calculation of a 1500 calorie diet. (Glucose 93 grams.)
   (b) Quiz on food values.

Seventh day.

Dietetics. This begins the work of calculating diet substitutions, i. e., fruit for vegetables, eggs for meat, milk from cream, etc., (45 minutes.) Oral quiz. (15 minutes.)

Eighth and Ninth days.

Dietetics. (45 minutes.) Quiz. (15 minutes.) Calculation of 2000 and 2500 calorie diets.

Tenth day.

1. Practical demonstration in the laboratory of qualiative urine sugar test. (Benedict.) (15 minutes.)

2. Acidosis. Cause, prophylaxis, symptoms and treatment. (45 minutes.)

The above series of talks and quizzes covers approximately three weeks time. It is then repeated. Most patients require at least two series before they can be trusted to adjust their diets or make accurate food substitution without overstepping their natural tolerance. Patients who find it impossible for one reason or another to enter the hospital, attend the classes regularly after they have been placed upon a diet ranging from 1500 to 2000 calories. In the period, while they are at home in bed, some other member of the family attends the classes and learns enough preliminary dietetics to carry the patient through the first ten days. The mentality of some individuals or their lack of arithmetical sense prohibits the freedom of individual diet substitution. These patients are always dependent upon the dietitian for variations of diet.

The question of fidelity is largely influenced by the ability of the patient to learn dietetics and to vary the monotony of his daily ration to suit his individual desire for particular foods. Some learn this rapidly. Others never do. The influence of teaching this has been repeatedly demonstrated. A girl of sixteen is very fond of fruit at times and is in the habit of stealing it occasionally with a consequent glycosuria and a temporary decrease in tolerance. By teaching her the simple arithmetic of substituting fruit for the total amount of vegetables at a meal, her appetite for the former is satisfied and she stays within her tolerance.

Most patients find it hard to understand the question of blood sugar, the so-called "spilling point" and the resultant glycosuria. Sansum explains this to patients in a very simple way. It is referred to in the above outline under "bath tub" analogy. He draws on the blackboard a cross section of a bath tub. The water entering the tub is compared to the glucose entering the blood from the food. The outlet represents the blood sugar burned in the body. As long as the water leaves the tub as rapidly as it enters, the level does not change. This level is put at 120, the upper limit of normal blood sugar. If the drain becomes plugged, that is, if the sugar burning power of the pancreas is decreased, less sugar is burned and the level rises until it reaches the upper safety outlet, the kidneys. This point is called 180, the usual "spilling point." Sugar then appears in the urine.

These illustrations must be made graphic to allow the less active mind to grasp them. We have found decidedly more cooperation in patients who have been trained in these fundamental ideas than with those who have been taught dietetics alone.

It will be noted by reference to the above outline that nothing is said about insulin until the fifth day class. Too much stress cannot be laid upon the importance of diet adjustment without insulin. After it has been proven to the patient what can be accomplished by this alone, and the diet has been increased to the tolerance limit, then insulin can be used if necessary to bring the tolerance to the desired point. Moreover, insulin is not used in outpatients until they have been thoroly schooled in dietetics, the danger of insulin use and the antidote.

SUMMARY

1. An outline of the teaching plan for diabetics is given.
2. Insulin use has reemphasized the importance of accurately controlled dietetics.
3. It has made necessary the teaching of diabetic patients in groups.
4. Group teaching of the diabetic produces better individual cooperation, promotes competitive learning and enhances fidelity.

THE EARLY DIAGNOSIS OF CANCER OF THE RECTUM *

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In discussing the question of the early diagnosis of cancer of the rectum and rectosigmoidal juncture, we are going to consider it from the practical stand point only. I am going to assume, in the first place, that the average time of diagnosis in this trouble is not as early as it might be, if certain conditions were not as they are. This assumption is not based on my own experience alone but upon the opinions of various well-known authorities. I can also state in passing that our diagnostic batting average in carcinoma of the rectum, at any stage, is much inferior to the diagnosis of this disease in any other part of the body. I believe we can also state right at the start that our assumption is not based on any ignorance or scientific inability, for I believe I am safe in saying there is no disease, of whose known aspects the profession is more thoroly conversant.

The reasons usually given for this peculiar state of affairs have always been unsatisfactory to me, as they seemed to be more statements of fact than explanatory in nature, but in reasoning it out from the psychologic stand point I believe the problem can be made quite plain, and I will endeavor to explain this matter as it looks to me later on in this paper.

Of course the responsibility for the early diagnosis of this disease rests mostly on the general physician and surgeon, for naturally he is the one who most often comes in contact with such cases. On account of the enormous field which he has to cover it is, therefore, important that he stick to fundamentals and the simplest technic possible in his methods of diagnosis. With that point in view I am leaving out all ifs and buts and am only considering such diagnostic aids as can be easily, rapidly and safely used by any physician and which at the same time are sufficient to clear up most of these cases.

The reason that is usually given to explain why carcinoma of the rectum sometimes reaches such an advanced stage before a diagnosis is made, is that the patient does not consult his doctor until late in the disease on account of the lack of pain symptoms and, therefore, his medical advisor is helpless in the matter. This is often true but

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* Read before King County Medical Society, Seattle, Wash. April 23, 1923.

I do not believe the reasons given are entirely satisfactory in explaining this condition. However, there is a certain percentage of cases that do consult us, in which the cancer is not diagnosed at the time or for many months later. Sometimes the consultation is in regard to symptoms having no direct reference to the rectum and it is in such cases that our diagnostic acumen is put to the greatest test.

What do we mean by an early diagnosis? By this we mean the detection of the disease before it has extended beyond the wall of the gut. As you all know, cancer starts in the rectal mucosa and is first found as a hard flat lump in the inner lining of the bowel. There is no ulceration of its surface and it is movable on the muscular coats. This might be considered the first stage clinically. It probably lasts from three to nine months and has no definite symptoms of a localizing nature. In this stage a diagnosis is extremely difficult and is rarely made. There is no bleeding, no mucus, no pain and no loss of weight.

There is, however, at this time a sympton that should make us suspicious. You can all think of many diseases, which in the incipient stage throw an indefinite shadow before them, which makes an acute diagnostician suspicious of the trouble and enables him, by keeping his patient under observation, to make a diagnosis at the earliest possible moment. Likewise in carcinoma of the rectum we have often such an indefinite symptom or set of changes which should put us on our guard and enable us at times to make a diagnosis, while yet the disease is within reach of the surgeon's skill.

Whenever we find a prolonged change in the individual's ordinary method of bowel movement, we should be suspicious of cancer of the lower colon. If the patient's bowels have been regular and he complains of constipation; if his bowels have been constipated and suddenly become regular, or if he first becomes constipated for several weeks and then develops a looseness and relative frequency, we have examples of the above condition. A sudden constipation or diarrhea, due to dietary indiscretions, change of surroundings, etc., is of course quickly rectified and means nothing. The change must last for weeks and must be more or less intractable in nature. That is what we mean by a prolonged change.

This indication will sometimes be given to the physician in a passing way, so that, if his mind is not alert to its meaning, a chance for a brilliant diagnosis has been lost. The patient with early carcinoma may even gleefully brag that, tho he has been constipated for years, he is now as regular as clock work and has a normal stool two or three times every morning and feels much better in every way. A digital and prostoscopic examination and a test for occult blood should, if possible, be made in all these cases and if nothing is found the patient should be warned to watch his stool carefully for any evidence of mucus or blood. Therefore, I repeat, whenever you have a patient, particularly one who is past middle life, who shows a prolonged change from his ordinary method of bowel movement, for which you can find no cause, keep cancer in mind until time has excluded this possibility.

In the second stage, i. e., when ulceration of the surface of the growth has taken place and we have extension into the muscularis, there should be no trouble in making the diagnosis, if we will only make a rectal examination. And right here is where our batting average falls down. The examination is frequently not made. There is no simple form of physical examination which is so much neglected as digital examination of the rectum, and for that reason there is no other easily diagnosible disease which at times is allowed to run on for months without being detected.

The mistakes that are sometimes made of treating a patient for diarrhea or dysentery or operating for hemorrhoids or fistula on a well marked case of cancer of the rectum are sometimes astounding, and can be summed up in a few words—the lack of a proper rectal examination. But why is this simple procedure neglected? Why will a physician during the course of the day make a blood pressure test, a lavage of the stomach, a vaginal examination, etc., and neglect to make a rectal examination?

Here we have the secret of the whole matter and I have come to the conclusion that most people, including many physicians, are suffering from a rectal-complex. If you will analyze your feelings the next time you pass up making a rectal examination when it should be made, I believe you will agree with me in this contention. You will find there is either something that represses you or else you refrain on account of the recognition of this mental attitude in your patient. The small child has no disgust or fear for the anus or bowel movements. The ordinary child will smell, handle or even eat fecal matter without the slightest compunction. But the wrath of civilization rapidly descends on his head, led by parents and teacher; fear and disgust are so instilled that a veritable complex is often established, marked traces of which are sometimes found in the members of the medical profession itself.

This is the reason that the individual, who will at once consult his physician in regard to the slightest trouble with his eyes, teeth, stomach, etc., will suffer rectal discomfort for years without disclosing his symptoms. A series of memory ghosts of a repressive, painful and shameful nature are standing guard in his subconscious mind screaming, "Unclean! Unclean!" so that his judgment and will power are side tracked from their usual reasonable conscious action. The question of the proper psychologic education of the child in regard to this question is not within the province of this paper, but the explanation of acts of omission, due to repressive subconscious memories of a disagreeable nature, is usually sufficient to prevent a repetition of these acts and is, therefore, given in the cause of more frequent rectal examination.

The symptoms which call our attention to the necessity for a rectal examination are due to the pathologic changes which have been gradually taking place in the local trouble. After an indefinite period of from three to nine months, depending on the type of growth, the surface becomes abraded, bringing about the ulcerative stage. The growth by this time has infiltrated the muscularis, also extending its circumference so that it involves one-fourth to three-fourths of the lumen of the gut. The frequency of bowel movements increases from two or three to a half dozen or more, particularly marked in the morning—the so-called "morning diarrhea." Mucus and blood appear mixed with feces.

Pain, dull or aching, generally referred to the sacrum, now appears. This soreness is more marked after bowel movements and of course depends for its nature on the location of the growth. When situated high up, it may be slight. Due to the thickening of the bowel wall the rectum is unable to empty itself and we have the sensation of an incomplete movement, or tenesmus appears from straining. The patient begins to lose weight.

The above symptoms are those produced by the adenoid and medullary type of cancer, by far the most common and most important as they appear in young or middle age. The scirrhus form usually appears later in life, affects mostly the rectosigmoidal juncture and may be first evidenced by a constipation, resulting in obstipation, altho a little blood and mucus are usually present.

It may be noticed that I do not emphasize age in this disease. Cancer of the rectum appears at any age and, while more common in the fourth and fifth decades, it is relatively frequent in the third.

The digital examination should be made in the left lateral position with the patient's knees well drawn up. A moment's examination will positively diagnose at lease fifty per cent of the cancers that occur in the terminal colon. What will we find? In the vast majority of cancers within reach of the finger we will find a hard lumpy condition in the wall of the rectum, which is raw and rotten on the surface and which often has a peculiar disagreeable odor. This is a cancer and in the ordinary typical cases, and most of them are typical, there is nothing else like it. Neither syphilis, tuberculosis, stricture or any other condition presents such a lesion with a hard base, lumpy edges and a raw and rotten surface.

if nothing is felt with the finger, altho this usually comes away stained with mucus and blood, we pass to the protoscopic examination. For general use the safest and mose efficient instrument is a plain six-inch proctoscope, three-fourths inch in diameter, to be used with the patient in the knee chest position and with reflected light. This will reach to and just within the rectosigmoidal junctures and will enable us to diagnose probably thirty per cent of cancers which could not be reached by the finger. It will also give us a view of those which have been reached by the finger.

When we have diagnosed the condition the next question is, have we made an early diagnosis? Has the disease yet extended beyond the wall of the gut? If we have detected our trouble during the first six months of this clinical stage, we may as a rule answer "yes." Symptomatically the third clinical stage, when the perirectal tissues and lymphatic glands have been involved, is evidenced by the following change in symptoms: Mucus and blood are passed alone, hemorrhage at times is severe, the pain becomes more constant and deep seated, extending into the pelvis and down the thighs, and cachexia supervenes.

From our rectal examination we also get important evidence as to the length of time the disease has lasted and how far it has extended. On this point I cannot do better than to quote from Goodsall and Miles who, in a most excellent article on this subject, state:

"In most instances the lower border of the growth is within three inches of the anal margin, but in some the disease is situated at so high a level that it can only just be reached by the finger. With the exception of the carcinomata situated at the junction of the rectum and sigmoid colon, the growth will seldom be found to involve the whole circumference of the bowel, there nearly always being a well marked strip of apparently healthy mucous membrane intervening between its lateral extremities. The extent of the circumference involved is an important factor in the estimation of the duration of the disease and, therefore, of the probability of the growth having extended beyond the limits of the rectal wall at its seat of origin. If the growth be small, involving less than a sixth of the circumference of the bowel, and especially if it be sessile and attached by a broad base to the mucous coat, if its surface be smooth tho somewhat irregular, and if its margins are firm and indurated, it is in the early or preulcerative stage of its development.

"Even at this stage some degree of fixation to the muscular coat may be found to exist. If the growth involves a quarter or more of the circumference of the bowel, it will nearly always be found that its surface is excavated in parts, that its margins are nodular, everted and indurated, and that its base is infiltrated and firmly fixed to the muscular coat. These characteristics show that the growth is undergoing disintegration at its surface and has been in existence for some time.

"When the growth involves from three-quarters to five-sixths of the circumference of the bowel, there is generally considerable narrowing of the lumen, into which the finger can with difficulty be passed. In such a case, if the upper border of the growth cannot be reached while its lower border is within three inches of the anal orifice, the disease is usually of long duration and has probably not only extended into the perirectal structures but has given rise to extensive involvement of neighboring lymphatic glands.

"When these points have been ascertained in regard to the growth itself, the condition of the neighboring viscera should be inquired into with a view to determining the question of the possibility of the removal of the growth. Lastly, evidences of the invasion of the inguinal, pelvic and lumbar lymphatic glands and the existence of secondary deposits in the liver or other organs should be carefully sought for."

With regard to differential diagnosis we have sometimes to consider benign stricture, adenomatous polypi, papilloma, invagination of the rectum, tuberculous ulceration and induration from fistula. The length of the paper precludes including this question. In grave doubt we can always take out a small section for microscopic examination. When the physician has reached the point of differential diagnosis, he is rarely apt to make a mistake.

In old cases of colitis, hemorrhoids and fistula, which themselves present some of the symptoms of carcinoma and therefore mask the disease when it appears, mistakes are more likely to be made. Therefore, when we are called on to treat or operate on an old standing case of one of these chronic conditions, it is a good idea at the first examination to exclude cancer, as it is most embarrassing to treat a patient for colitis, etc., for six months and then to have to inform him that he has cancer, or while operating on a case of hemmorrhoids to run into a juicy malignant growth.

Cancer of the sigmoid proper, which makes up about ten per cent of anorectal sigmoidal malignant growths, was not considered in this paper for, while its indications and symptoms are similar to those growths lower down, its methods of diagnosis are different and not as simple and safe as the latter. The use of the sigmoidoscope, x-ray and exploratory laparotomy are sometimes necessary in this later disease, making it more or less a distinct subject.

328 Lumber Exchange Bldg.

The Increased Incidence of Organizing Pneumonia. In a review of 125 cases of lobar pneumonia seen by Douglas Symmers and Arthur M. Hoffman, New York (Journal A.M.A., July 28, 1923), at necropsy in the pathologic laboratories at Bellevue Hospital during an unselected interval of two and one-half years, organizing pneumonia occurred four times—an incidence of 3.2 per cent. Over a period of four months ending in May, 1923, there were seven examples of organizing pneumonia among thirty-four cases of lobar pneumonia—an incidence of 20.6 per cent. It is apparent, therefore, that in the latter part of last winter the condition became distinctly more frequent than it had been in previous years. In a series of forty cases of lobar pneumonia, McCrae found symptoms of delayed resolution in between 3 and 4 per cent. Therefore, the incidence of unresolved pneumonia as encountered clinically, and of organizing pneumonia as met at necropsy, in ordinary circumstances, is practically identical. Furthermore, in view of the fact that the clinical signs of unresolved pneumonia are not to be distinguished from those of organizing pneumonia, the assumption appears to be justified that they represent one and the same process. The symtomatology of organizing pneumonia is that of lobar pneumonia with delayed resolution. Anatomically, the process may involve one or more lobes diffusely. As a rule, however, the distribution is patchy, the individual patches varying in size from one to several centimeters. The condition is anatomically and histologically distinct from the ordinary chronic interstitial pneumonia of syphilis, tuberculosis and the like.

THE VALUE OF PERIMETRIC STUDIES IN VISUAL DEFECTS *

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The developments in the study of focal infections and of intracranial lesions have drawn attention to the disturbances associated with the visual pathway and a study of these disturbances has become of the greatest importance not only to the ophthalmologist but to the internist, the neurologist, the neurologic surgeon, the otolaryngologist and to the general practitioner as well, for the very careful mapping out of visual field defects, scotomata, etc., frequently has a very definite value in localizing the pathologic process. It is in those conditions in which scotomata, contraction of the visual field or the combination of both are present, such as involvement of the central nervous system, the functional nervous disorders, paranasal sinus disease, glaucoma, optic atrophy, optic neuritis and such, that a careful examination of the visual fields should be a matter of routine. In those conditions, in which there are no pathologic processes visible with the ophthalmoscope, the careful examination of the visual fields both peripheral and central is absolutely essential.

Vision may be divided into two kinds; central and peripheral, central vision being that part which permits us to fix accurately a small object and peripheral that part which we see with a fair degree of accuracy about us when fixing one point. Central vision notes the details of objects with greater precision than peripheral, while peripheral vision is more sensitive to moving objects.

Quite a few factors influence the size and shape of the normal fields, chief among them being the bony prominences of the face, the shape of the orbital cavities and the activity of the retina. There are other factors that play a minor role, such as the width of the palpebral fissures, size of the pupil, refractive errors, fatigue, effect of light and the intelligence of the patient.

The normal form field varies within certain limits but for practical purposes it may be said that white objects may be recognized above about 50 to 55 degrees, nasally about 55 degrees, downward 70 degrees and temporally 90 degrees and beyond. Blue extends to about 15 degrees of white. Green is seen normally about 20 degrees upward and to the nasal side, 25 degrees downward and 30 degrees outward. Red occupies an intermediary position between blue and green. These figures are only approximate, however, but for practical purposes may be considered as normal.

The illumination used in giving the brightness quality to the test object is as yet a varying quantity with different operators. The need of some sort of standardized illumination is urgent and the answer to that need is still to come. The use of daylight lamps or filters is fairly universal but no standard has been set as to the quantity and quality of that illumination. It is important, however, that the individual always maintain the same degree of illumination in taking fields, so that there may be uniformity of results. Highly specialized laboratory methods have shown conclusively that the size of the color fields can be markedly altered, depending upon the illumination, using the same sized test object. Increasing the light stimulus has brought forth a response from the more peripheral parts of the retina. Normally, however, the peripheral retina is not totally blind to colors, for by increasing the size of the test object colors may be perceived almost to the extent of form. For practical purposes an object of fixed size is generally used, one of either two or three degrees.

The simplest form of perimetry is the hand method and every practitioner should be able to use this method. The examiner standing directly in front of the patient at arm's length, uses the hand on the side of the examined eye as a test object and his own field as a guide. The other eye of both patient and examiner is closed. In this way very gross defects in the field are noted, particularly the hemianopsias and pronounced narrowing of the field. Obviously small scotomata cannot be mapped out. For the specialist other methods are made use of, such as the various tangent screens or blackboards, similar to that which Bjerrum introduced.

Forster overcame the varying distance problem present in the tangent screen and gave to the profession the perimeter. This today is the most commonly used instrument in studying the visual fields. It has many disadvantages, however, chief of which is that it is very unsatisfactory for the study of scotomata and the normal blind spot. For this work a more accurate instrument is necessary and many have been introduced, among which are Peter's campimeter, Elliot's scotometer and the stereocampimeter of Lloyd. This last instrument in my experience has been of the greatest value in accurately mapping out small defects about the area of central vision and in the study of the blind spot. It has the

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* Read before Portland City and County Medical Society, Portland, Ore., April 18, 1923.

invaluable feature of affording binocular fixation and this reduces the fatigue element and permits of greater accuracy.

A brief review of the course of the visual fibres recalls to mind that the various layers of the retina, which are a continuation of the optic nerve, spread out over the interior of the eyeball above, below and to the nasal side in a fairly uniform manner. To the temporal side they bend around the macula to reach the periphery, making their course a longer one, a point which has to do with some of the early form and color changes in certain conditions. The macula itself is supplied with a separate set of fibres known as the papillomacular bundle, which is supposed to be a direct pathway from the point of central vision to the cortex. As the retinal fibres leave the eyeball in the shape of the optic nerve, they traverse the orbit for a short distance and then lie within the optic foramen and the skull. In the optic foramen the nerve is in close proximity to the sphenoidal sinus and this relationship is a predisposing factor in the production of retrobulbar neuritis. In the chiasm a partial decussation takes place, those fibres from the temporal halves of the retina continuing without crossing and the fibres from the nasal halves crossing to join the temporal fibres of the opposite eye and continuing on as the optic tracts. The optic tracts enter the primary visual centers and from here a new neuron begins and carries the visual impulses to the cortex in the occipital lobe by way of the optic radiations. Lesions in any part of this pathway bring about visual disturbances which if carefully studied perimetrically will aid greatly in localizing the leison.

The changes that take place in lesions of the visual pathway are changes in the size and shape of the form and color fields and scotomata or blind spots. In the form and color fields the changes may be either a concentric contraction, a more or less irregularly contracted field or the latter with large angular defects. These changes are gross in character and it is chiefly in the behavior of the colors that we are furnished with a more delicate test in the early stages of disease. Contraction or even loss of the normal color fields may be present without any appreciable evidence of diseases being visible with the ophthalmoscope.

Scotomata or blind spots other than the normal blind spot always denote the presence of pathology, be it in the retina or other parts of the visual pathway. These blind spots may be positive or negative, depending on whether or not the patient is conscious of them in his visual field. They are also classified into absolute, relative or indistinct. An absolute scotoma is one in which both form and color are lost; a relative scotoma, one in which color only is lost and the indistinct scotomata those in which form and color are seen but not sharply and clearly. These latter areas often surround absolute or relative scotomata and denote extension or regression of the process, depending upon whether or not the scotoma is increasing in size or type. These blind areas may occur at the point of central vision or in the periphery. If at the point of fixation, it denotes an involvement of that particularlv vulnerable set of fibres, the papillomacular bundle. This condition is found in true toxic amblyopia and sometimes in paranasal sinus disease. Scotomata may also assume very large proportions, involving a sector or even half of the field, the condition then becoming an anopsia, either quadrant or hemianopsia.

In any involvement of the various parts of the visual pathway, there are more or less characteristic perimetric findings, depending upon the location of the lesion. In diseases of the retina, especially of the ganglionic cell layer, we invariably find a contraction of the form and color fields and especially an involvement of the red and green fields. These are affected early as a rule. In choroid disease there may be little or no involvement of the form field but generally a defect in the blue field and the presence of multiple scotomata. As to the nerve head or papilla, especially the inflammatory conditions and in glaucoma, one generally finds an enlargement of the normal blind spot. This is very frequent in choked disc, posterior sinus disease and optic neuritis. Later in these conditions, if nerve degeneration takes place, there may occur the characteristic contraction of the form and color fields.

It is in disease of the posterior accessory sinuses, accompanied by visual defects, that one gets a typical picture. In all such cases, if searched for, there would invariably be found an enlargement of the blind spot. This with a central scotoma, varying in size and either relative or absolute, and a contraction of the form and color fields is very common. Opening up the sinuses in this group frequently brings about restoration of vision in a short time (see cases 1 and 2).

In the chronic form of retrobulbar neuritis, or toxic amblyopia, one is more apt to find the characteristic central or pericentral scotoma, with little or no involvement of the peripheral fields. The scotoma may be absolute or relative and is generally negative, the patient complaining only of a haziness of vision and not of seeing a blind spot (see case 3).

It is in diseases in and about the chiasm that perimetry offers great aid in helping to locate the disturbance. The findings here are apt to be bizarre, it is true, yet there are certain more or less characteristic findings. Bitemporal and binasal hemianopsia, the altitudinal hemianopsias and irregular hemianopsias are the rule, depending upon which part of the chiasm is involved. There is a definite relationship of the fibres in the chiasm to the different quadrants of the retina. The fibres in the upper part of the chiasm are associated with the cells in the upper retina; those in the lower part of the chiasm with the inferior quadrant retinal cells, etc., and, containing as it does both crossed and uncrossed fibres, an involvement of this portion of the visual pathway causes fairly definite types of anopsias. The optic nerve fibres also undergo degeneration in diseases about this area, so that in the seeing parts of the field there are often form and color changes.

In involvement of the optic tracts from chiasm to the basal nuclei the characteristic finding is that of homonymous hemianopsia. As to whether or not the lesion is in the tract or beyond the basal nuclei is determined by the presence or absence of nerve atrophy, as seen by the ophthalmoscope. Lesions beyond the basal nuclei do not show the pallor of the disc, as seen in tract leisons.

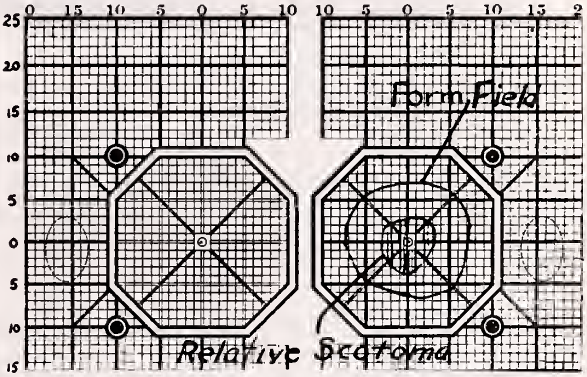
The perimetric findings in lesions in the neighborhood of the calcarine fissures and cuneus are, as a rule, very irregular in character. In this area the wide distribution of the visual fibres prevents the loss of all communication with the higher centers, consequently studies with the perimeter generally show homonymous quadrant defects, irregular in outline, or central amblyopias. In these types of lesions ophthalmoscopic examination of the fundi is obviously negative (see case 4).

In regard to that bugbear of ophthalmic practice, glaucoma, perimetry and campimetry are indispensable. Without a study by means of these methods no one can treat glaucoma successfully. The early shrinking of the nasal field; the contraction of the form and color fields, which in the later stages of the disease may be contracted almost to fixation, yet the patient be able to read fine print; the sector-like defects; the enlargement of the blind spot especially above and below and the presence of scotomata of various types all are points which we have no way of recognizing without the aid of perimetric studies. The careful examination of the central field defects with the red and green test objects is of special importance, for it tells us accurately just how close to the point of central vision the process is advancing. By these means cases may be followed with an exact knowledge of the amount of involvement of vision and act as a check and guide in the therapeutic measures used.

CASE REPORTS

Case 1. A young boy, 12 years of age. On Feb. 15, 1922, on arising in the morning, he noticed that the vision of his right eye was poor. Examination showed vision O. D. 1/60. As patient had had a cold he was referred to an oto-laryngologist, who reported a nose full of pus and an extreme deflection. Visual fields taken at this time showed a form field contracted to within about eight degrees of fixation, and a relative scotoma four degrees about and including fixation. The nasal condition was treated and on the following day vision had risen to 5/12 and there was no central area defect. Form field still contracted.

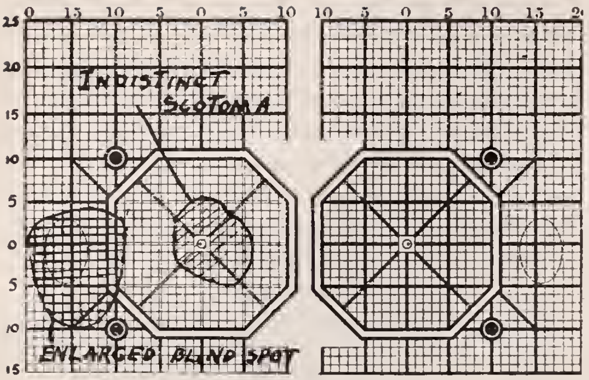
On March 8, 1922, patient had a similar attack with sudden diminution in vision of O. D. to 1/60. Fields showed form field contracted to within three to five degrees of fixation with an indistinct central scotoma. The following day vision had risen to 5/15, form field had expanded and central scotoma had disappeared. Patient had had septum resected in the meantime.



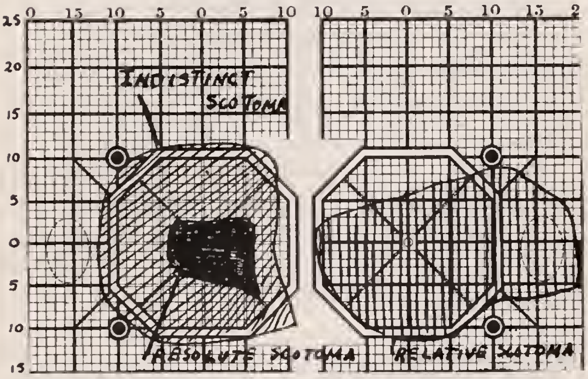
Case 1. ½° Object

On April 21, 1922, there was again a rapid loss of vision in O. D. to 2/60. Contracted fields but no central scotoma. Four days later exenteration of ethmoids and sphenoid on right side was done and in nine days vision of right eye was normal. Until June 21, 1922, patient had occasional attacks of blurring in right eye, each time following a "blow up in the nose." Fields showed a gradual enlargement and blind spot became normal. This case was undoubtedly one of retro-bulbar neuritis, dependent upon posterior sinus disease.

Case 2. A young woman, age 22, noticed a blur over left eye of five days duration. Vision O. S. 6/20. Fundus examination showed disc edges blurred, intermediate zone congested, lamina cribrosa not visible. No hemorrhage or exudate. Examination of central area and blind spot of left eye showed an indistinct central scotoma and a very much enlarged blind spot. The report of the nasal examination was an obstructing deflection, mucopurulent drainage, evidences of hyperplasia in posterior ethmoids and pus in left sphenoid. The sphenoid was opened and ethmoids exenterated. Five days later vision in left eye had risen to 6/9 and in two weeks time vision



Case 2. ½° Object



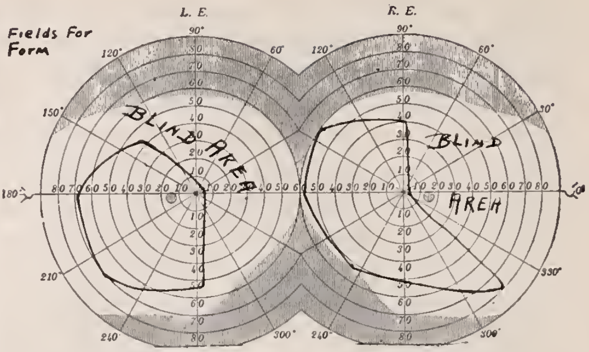
Case 3. —½° Object

was normal. Fields were normal but there remained an enlargement of the blind spot.

Case 3. Patient stated that for a considerable time he had only been able to see fine print and had had difficulty in recognizing people across the street. The dimness of vision began a year previous, following the drinking of some home made concoction, the purity of which was uncertain. The dimness had become progressively worse. Vision O. D. 3/60. O. S. 1/60. Examination of the fundus showed very little. Edges of the disc were blurred and there was a suspicious pallor of the temporal sides of the discs. Form fields were practically normal. Examination of the central areas on the campimeter showed in the right eye a large relative scotoma which included central fixation and the blind spot. Left eye showed an absolute central scotoma, surrounded by an indistinct zone extending about ten degrees in all meridians.

Little was to be hoped for by way of improvement. However, in two weeks time under treatment vision in right eye rose to 5/60 and left eye to 2/60. The central areas showed a marked change. The large relative scotoma of the right eye had disappeared, leaving only a small paracentral scotoma (absolute) downward and to the temporal side. Left eye still showed the absolute central scotoma but the indistinct zone had disappeared. The patient had to return home in another state and no further studies were available.

Case 4. The patient, a male, 68 years old, had had a week previous to examination an attack of vertigo, following which he was unable to read. During the attack of vertigo he had had pain in the left occipital region and since the attack his memory has been very poor. At the time of examination he was able to see distinctly but was unable to name the letters of the test chart. Examination of the fields showed an irregular right hemianopsia with a contraction of the remaining field in the left eye. Central vision in each eye was intact.



Case 4. 3° Object. Artificial Daylight

In view of the fact that this patient had a loss of the power to recognize written words or letters, so called word blindness or alexia, in combination with a right homonymous hemianopsia the lesion in all probability was in the neighborhood of the left angular gyrus with an extension to the optic radiations on that side. The patient was seen but once, so no further studies could be made.

In conclusion, I want to emphasize the importance of perimetric studies. To be sure the work takes time and patience, but the knowledge gained will offset the disadvantages. In all types of visual lesions, perimetry and campimetry not only aid in the diagnosis, but also help in the prognosis, as the behavior of the fields and scotomata during the regressive stages of disease offers much light on the ultimate visual defect. It is a healthy sign to note the developing consciousness in the profession that perimetry is an essential part of ophthalmology, to be employed in the daily routine of office practice, and not as an interesting bit of investigation to be practiced in one's leisure moments.

Gastric Ulcers. That gastric ulcer can be diagnosed by means of the roentgen ray as definitely as can a fracture of an extremity, and, that, if properly employed, the roentgen-ray test is far more accurate for diagnosis of ulcer than the Wasserman test is in the case of syphilis is the claim made by Lewis Gregory Cole, New York (Journal A.M.A., July 28, 1923). The methods of studying the pathologic changes of gastric ulcers are: (1) necropsy, (2) biopsy and (3) roentgenology. The limitations of the first two methods are apparent. The scope of the third is unlimited, and the operation is relatively simple. By serial roentgenology with examination frequently repeated, one may study the gross pathologic changes of gastric ulcer, the size and shape of the crater, the amount of induration surrounding it, its location in the stomach and its increase or diminuation in size during periods of exacerbation or recession of symptoms, and may determine whether any cases of simple gastric ulcer ever become malignant. Different methods of employing the roentgen ray in the diagnosis of gastric ulcers are (1) a fleck of bismuth subnitrate barium remaining in the crater of an ulcer; (2) symptom complexes, and (3) morphologic changes in the walls of the stomach.

PAPYRACEOUS FETUS, REPORT OF A CASE

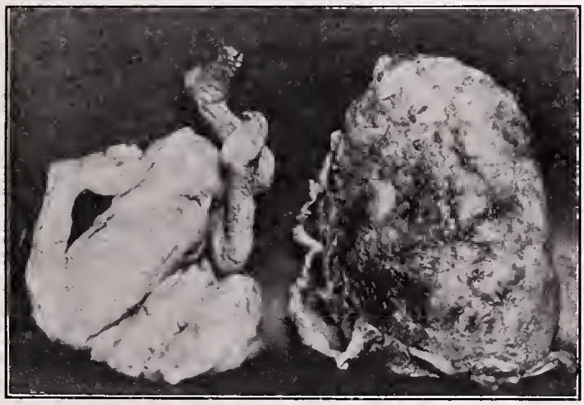
Phil J. Keizer, M.D., Russel C. Keizer, M.D.
and Ira B. Bartle, M.D.
NORTH BEND, ORE.

A primipara, age 18, passed thru an uneventful pregnancy, the physician being consulted only for frequent routine examinations of the urine, which were uniformly negative. She came to delivery at term in her own home.

The first examination during labor revealed something not normal presenting. Careful manipulation brought about delivery of what appeared to be the hand and arm of a very small fetus, obstructing delivery of a living babe, and interfering with a diagnosis of the type of presentation.

The patient was removed to hospital, where a much flattened, dead fetus, of the so-called "pancake" type was delivered, following which a diagnosis of breech presentation of the living child was made, and delivery accomplished by version. The placenta for the living child was then delivered, after which a separate, much atrophied placenta and cord for the dead fetus were delivered. The living child, a boy, 7 lb. 6 oz., was normal in every respect, and the mother made an uneventful recovery.

The dead fetus, measuring approximately 25 cm. in length, was much flattened, with badly distorted head. The attached cord and placenta were completely atrophied, the latter consisting merely of a succession of infarcts, the whole measuring 13 x 14 cm. and not over 1 cm. thick. The placenta and cord for the living baby were normal.



Investigation into the history of the case reveals little that would account for this anomaly. Father and mother of the patient were normal, healthy individuals, with eight healthy children. Two great aunts had twins, all normal.

The patient had little or no nausea thruout the pregnancy other than during the first month. Some lack of appetite and certain food idiosyncrasies, such as accompany any pregnancy, are noted. Of interest is the observation of the patient that she had a particular aversion to eggs at this time, tho she had been in the habit of eating them freely. This might suggest a possible protein sensitization due to the dead fetus, as might also the observation that meat was not well tolerated. However, the same was to be said for certain other articles of food, such as potatoes, and to some extent cereals. She had no headaches, nor other symptoms of intoxication, was able to do all her own work thruout the period, and had no pains other than some in the lower pelvis during the last two months, that chiefly on pressure.

The patient does state that she had a fall at about three months term, resulting in some pain and nausea for two days. This was not severe enough to call for the services of the physician, and no importance was attached to it at the time. At six months, also, she received a rather severe fright when a machine in which she was riding, skidded, but no untoward result followed.

One can only speculate on the role played by either of these accidents in the condition found. The length of the fetus, 25 cm., indicating a development of about five or six months, would point to the later rather than the earlier accident, if indeed either was concerned. Symptoms of intoxication following the death of the fetus would have been expected, tho report has been made of retention of a dead fetus in one horn of bicornuate uterus for years without any evidence of intoxication, even during subsequent pregnacies. In fact, the condition was not diagnosed until an operation years later.

The uterus in this case was of normal type, and it is difficult to explain the anomaly. The interest in such cases centers chiefly in their unexpected presentation at an apparently normal delivery, following an uneventful pregnancy.

NEW ADVERTISEMENTS

The Corona Typewriter advertisement (page 28) offers excellent suggestions concerning correct rules in preparing manuscript for publication, which every author can peruse with profit. Further information is obtainable requesting Folder No. 66. Canyon Sanatorium (page 12) presents itself as a most desirable institution for the treatment of tuberculosis. Attention is called the following food products: One Oat Dish (page 12), Whole Grains (page 15), Pettijohn's Rolled Wheat (page 19). Metropolitan Press (page 20), has a well established reputation for all kinds of printing.

High Voltage Roentgen-Ray Therapy. Sherwood Moore, St. Louis (Journal A.M.A., July 28, 1923, asserts that the high voltage roentgen-ray method of treating malignant disease accomplishes much in an otherwise therapeutically sterile field—that of advanced malignancy. However, it is an addition to and not a replacement of any agency at present used in the treatment of malignant disease. Patients with widespread extension and metastases should have less surgery and more radiotherapy.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Montana
Devoted to the Interests of the Medical Profession of the

Editorial Office, 323 Cobb Building, Seattle, Wash.

AUGUST, 1923

EDITORIAL

CHANGES IN JOURNAL RELATIONS

For the past twelve years NORTHWEST MEDICINE has been the official publication for the Utah State Medical Association. The relations between the two have been harmonious and uninterrupted. This journal has found that this connection has been profitable from every standpoint. It has been the means of presenting to our readers many valuable papers, written both by the members of the Utah association and many leading physicians and surgeons of the East. Conditions have arisen, however, which have made it advisable for this association to connect itself with the California State Journal of Medicine. Therefore, its connection with this journal ceased with last month's issue.

At the last annual meeting of the Montana State Medical Association it was voted to designate NORTHWEST MEDICINE as its official publication. As in the case with the other three associations which this journal represents, the transactions and papers read before its meetings will be duly published. The four states of Oregon, Washington, Idaho and Montana represent a cohesive area with many common interest. The medical profession in all comprise the same class of men and women, whose training and interests are similar. It is hoped that these interests may be fostered and promoted thru the agency of this journal. The management will attempt in the future, as in the past, to represent such one fairly and to as large an extent as possible in the space available for publication.

The object of this journal is to serve the interests of the profession in the states which it represents. The editorial staff does not pretend to be infallible. It will doubtless make mistakes in the future, as it has in the past, but the aim will be to care for the medical men and women of this Northwest territory as accurately as it is possible to understand them. Criticisms and suggestions regarding the management and conduct of the journal will be welcomed from its readers. It is superfluous to state that it will be impossible to follow all suggestions, but they will be willingly received and duly considered.

MEETING OF MONTANA STATE MEDICAL ASSOCIATION

The forty-fifth annual meeting of Montana State Medical Association was held in Butte, July 11-12. An excellent scientific program was presented, an unusually large amount of association business was transacted, and the well known hospitality of Butte and the medical society of Silver Bow County left nothing to be desired from the social side. The first day was devoted to organization and committee work, meeting of the House of Delegates, and the first part of the scientific program. The speakers from outside the state were Drs. V. C. Hunt, of Rochester, Minn., and W. T. Williamson, of Portland, whose paper was given in his usual delightful and scholarly style.

Contrary to the custom of holding the annual banquet on the last night, it was held the first night with the result that there was an unusually large attendance. It was an especially pleasant occasion. The feature of the evening was a talk by Dr. V. H. Stickney, of Dickinson, N. D., upon pioneer days in Montana. His anecdotes and vivid descriptions held his audience captivated from the time that he rose to his feet, at times fairly rocking the Silver Bow Club with laughter, and at times almost bringing tears to the eyes of his hearers.

On the second day a prolonged meeting of the House of Delegates was followed by the remainder of the scientific program. After an excellent paper by Dr. R. C. Hall, of Anaconda, upon the Rubin test, a short business meeting was held and officers elected for the ensuing year. In the afternoon the meeting adjourned by auto about twenty miles to Warm Springs, where the association was entertained by the officials of the State Hospital for the Insane. Dr. J. C. Shields, of Butte, presented a paper upon empyema, after which refreshments were served in the residence of one of the resident physicians. Immdiately after this a personally conducted tour was made thru the grounds and several of the buildings, during which the members had the opportunity of studying music and drawing and of meeting such distinguished personages as the President of the United States, the King of England, Christopher Columbus, and the owners of the vast ranches and valuable mines.

The next stage of this progressive meeting was held at Galen, the State Tuberculosis Sanatorium, some ten miles distant, where a paper on pneumothorax, with x-ray demonstrations, was presented by

Dr. C. E. K. Vidal, the superintendent. After this the members and their wives were the guests of Dr. and Mrs. Vidal at a most delicious fried chicken supper, previous to and during which musical entertainment was furnished by a quartet, hand-picked, coached on the spot and led by Dr. E. M. Jans. To a visitor the outstanding features of the meeting were, first, the smoothness and dispatch with which the great amount of business was transacted, and, second, the excellent spirit of cooperation and good fellowship which was manifest on all sides, both of which would seem largely accounted for by the ability and personality of the secretary, Dr. E. G. Balsam.

THE OREGON ANNUAL MEETING

When a state medical association holds its annual session immediately following a series of such large and comprehensive meetings as preceded the Oregon assembly last month, it would not be strange if a spirit of pessimism prevailed regarding the success of the local meeting. Such a result, however, did not ensue at the Portland meeting. While the attendance was not equal to that of some previous years, there was a goodly representation of the profession of the state, and it was what might be called a typical family gathering. Many distinguished members of the profession from the East have passed thru Portland in recent weeks, as was true of other cities of the Northwest. A number of well known men were scheduled for the program. Their papers were little, if any, superior to those presented by the members of the society. There was a liberal amount of discussion and the interest in the program was sustained to the end.

One of the interesting features of the meeting was a visit to the medical school by several groups of visitors. The opinion was commonly expressed by men from the East, who are familiar with all of the details of medical school equipment, that the University of Oregon Medical School presents the last word in preparations and appliances for the modern teaching of medicine. With the selected faculty of efficient teachers and the means for demonstrating all the various departments of a medical course, a student can be provided with no more superior methods for medical study. Regardless of the multiplication of medical societies and their division along special lines, there seems to remain a field for the state medical association. Altho some pessimists seem to think its day is ended, such a fact has not yet been demonstrated.

THE GRADUATE MEDICAL LECTURES

Altho some expected the attendance at the medical extension lectures of the University of Washington, in Seattle, last month to be affected by the numerous large medical meetings which preceded it, the expectations of its enthusiastic supporters were exceeded. The registration of 239 was only six less than the record established last year. Of this number 82 came from outside Seattle, including 15 from eight cities of Oregon, 4 from B. C. and 2 from Idaho. There were 32 cities represented from Washington besides Seattle. The success and popularity of this course of lectures are due primarily to the personnel of the lecturing bodies. It would be impossible to offer a drawing program superior to that of Stengel, Finney, Rosenow and Ormsby. Each presented a lecture on five successive days, thus affording opportunity to coordinate and form one's addresses into a systematic course. These lectures, unique in the realm of postgraduate courses of instruction, have become an established institution and their future development will add greatly to the education and welfare of the profession of the Northwest.

MEDICAL WOMEN'S NATIONAL ASSOCIATION

The ninth annual meeting of this association was held in San Francisco, June 25-26, in connection with the A. M. A. meeting. At the opening session Dr. R. L. Wilbur, president-elect of the A. M. A., delivered an address on "The Power of the Minority." A five year program for future work was adopted. An ammendment to the constitution was passed for group membership. Under this provision organzations of women, who are members of the A. M. A., may join this national organization as groups or societies. The association had interesting exhibits of its relief work in European countries. Dr. Kate Campbell Mead, of Middletown, Conn., was installed as president. The next meeting will be held in Chicago.

WELL MERITED HONOR

At the recent meeting of the American Medical Association in San Francisco, Dr. W. T. Williamson, of Portland, was reelected Trustee to represent the Pacific Coast for the coming three years. No member of the profession could be selected who would meet with such unanimous favor among the physicians of the Northwest as Dr. Williamson.

His experience in the practice of medicine, his engaging personality and his attractive qualifications make him especially fitted to represent the profession of the coast in this great medical body. We extend to him our congratulations for this well merited honor and do not hesitate to speak for the profession in saying that it is likewise honored in being represented by one so worthy of distinction.

AN UNUSUAL MEDICAL DISTINCTION

At the recent meeting of the Oregon State Medical Society, Dr. Alfred Kinney, of Astoria, was chosen as president-elect, which signifies that he will be acting president in 1925. The unusual feature of this election is the fact that Dr. Kinney was the first president of the society when it was organized fifty years ago. He states that at the time one half of the profession did not speak to the other half. He was a youngster with unattached affiliations, so that he was acceptable to all warring factions. It is a decidedly unique factor among medical societies thus to repeat at the end of half century. This president is a native of Oregon and a graduate of its medical college. His whole life has been spent in that state, where he is one of its best known citizens. May he live for many more years of active practice, in the occupation in which he is now busily engaged.

THE ANNUAL MEETING OF NORTHWEST MEDICINE

In connection with the meeting of the Pacific Medical Association in Seattle, the annual meeting was held on June 21, of Northwest Medical Publishing Association, which is the corporate body controlling and publishing NORTHWEST MEDICINE. It was held in connection with a luncheon, attended by representatives of the trustees from Oregon, Washington and Idaho, and members of the editorial staff. The annual reports were presented and a discussion followed concerning matters relating to the journal management. Dr. W. T. Williamson, of Portland, was elected president for the ensuing year, Dr. C. A. Smith, of Seattle, secretary and editor-in-chief, and Dr. John Hunt, Seattle, business editor.

MEDICAL NOTES

OREGON

Society Endorses Hospital. At the recent meeting of the Oregon State Medical Society a resolution was adopted to be presented to Gov. Pierce, which endorses and places the society behind Dr. R. E. L. Steiner as superintendent, and Dr. L. F. Griffith as assitant superintendent of the State Hospital for the Insane. This action resulted from the report that these officials were to be removed without any apparent cause, tho they had served long and faithfully, having shown experience and capacity.

Hospital Assigned to County Commissioners. "The Cedars," the property of the City of Portland, located fourteen miles up the Columbia River Highway, was recently formally taken over by the county commissioners. It was stated the property would be used for the benefit of disabled veterans if possible, or for some community purpose.

Newly Elected Officers. Dr. Frederick Stricker, of the Board of State Health Officers for Oregon, was elected president of the Pacific Coast Health Officers' Association, organized at the meeting of the A. M. A. in San Francisco.

Dr. Esther Phol Lovejoy visited Portland, her former home, last month. She made numerous addresses, telling of her work in the far East. Her history of the evacuation of Smyrna was a thrilling recital of personal observation. She says the Turk won the war, the truth of which seems apparent from her description of his successful and ruthless onslaughts.

WASHINGTON

Hospital Contract Awarded. The contract has been awarded for the improvement and addition to the Northern Pacific R. R. Hospital in Tacoma, to cost $135,000. Construction will be started at once and the work will be finished by November.

New Hospital Opened. The new hospital at Omak was opened last month. The building is on a lot 65 by 140 feet and will accomodate about twenty patients.

New Hospital Plan Endorsed. The Pierce County Medical Society, of Tacoma, has approved the new plan of managing the county hospital, consisting of a voluntary staff of physicians and surgeons, the condition being that the County Commissioners keep their hands off and leave the medical treatment and care of patients to the staff.

New Nurses Home. Work has begun on the construction of the three story fire proof building for the nurses' home at the Orthopedic Hospital, Seattle. It will cost $75,000 and provide accomodations for fifty nurses.

Walla Walla Sanatorium at Walla Walla has been reorganized with the appointment of a staff of physicians in various branches of medicine and surgery. It will be standardized according to the rules established by the American College of Surgeons. All forms of modern equipment will be installed to meet all the requirements of a modern up-to-date hospital.

Hospital Improved. The Valley Hospital, at Puyallup, has been renovated and refinished at a cost of a thousand dollars. It is open for the reception of patients.

New Medical Building to be Erected. Application has been made for a building permit for The Medical Arts Building, of Seattle, which will be erected at a cost of $1,800,000. It will be a sixteen story structure, all of which will be devoted to offices for physicians and dentists, except the first, which will be rented for stores. It will cover a ground area of 140 by 100 feet. It will contain all the latest appliances and equipment for professional offices.

President of Medical Organization. Dr. E. W. Young, of Seattle, was last month chosen president-elect of the American Institute of Homeopathy at its annual meeting held at Atlantic City, N. J. He will be installed in office at the next session to be held in Cleveland, O.

Resigns From Office. Dr. R. J. Carey, who for several years has been in charge of Oakhurst Sanatorium, the county tuberculosis institution at Elma, has resigned this office. He plans to locate in Long Beach, Calif., to engage in private practice.

Head of Medical Staff. Dr. Armin Fischer, of Spokane, has been appointed head of the Y. M. C. A. Medical staff at that city, with the assistance of several physicians. Their duties will consist of supervising all medical and physical examinations during the coming year.

New County Physician. Dr. E. L. Brinson, of Bellingham, has been appointed county health officer to succeed Dr. F. V. Shute, who has held the office for the past two years.

Dr. R. S. Miles, of Tacoma, has gone to Europe for a protracted period of study, chiefly in Edinburg, London and Vienna.

Dr. J. F. Cross has located for practice at Prosser. He formerly practiced at Shelton, Nebr.

Drs. R. J. and C. E. Elkhorn have located for practice at Oroville. They formerly practiced at Milwaukee, Wis.

Dr. Ralph Hendricks, of Spokane, was last month married to Miss Mary Schmidt of that city, the wedding ceremony being performed at Coeür D'Alene.

IDAHO

To Test Meaning of Law. A case was filed for suit at Boise last month to test the provision of the Medical Practice License Act, regarding the standing of chiropody. A female practitioner of this sort advertised in the newspapers as a "Doctor." The purpose of the suit is to find out whether such practitioners are entitled to use this designation.

Appointed Medical Director. Dr. Harry Einhouse, of Moscow, has been appointed medical director in charge of vocational training at the University of Idaho. He succeeds Dr. D. B. Harvison who has been in charge of the work for several years.

Superintendent Resigns. Dr. A. C. Hovey, for many years superintendent of the State Asylum at Blackfoot, resigned last month in consequence of criticism by federal authorities who made an inspection of the institution.

Appointed to National Guard. Dr. F. M. Coe, of Caldwell, has been appointed Major in the Medical Corps in the Idaho National Guard, following the resignation of Dr. W. S. Titus, of Boise, who has been appointed Colonel of the 116th Cavalry.

Resigns From Office. Dr. R. J. Cluen, of Boise, recently appointed physician to the Idaho Penitentary, resigned last month. Dr. George Collister was appointed to fill the vacancy. He formerly served as penitentary physician for several years.

Dr. W. H. Becker, who has practiced for a number of years at Bruneau, has moved to Oregon, where he will establish practice at Salem. He has recently returned from a period of study in the East.

OBITUARY

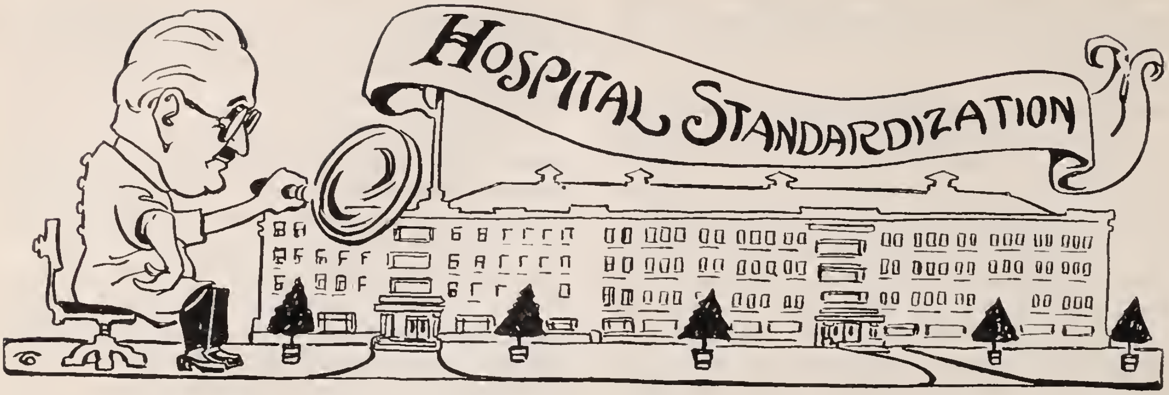
Dr. W. L. Wood, of Portland, Oregon, died at Monrovia, California, July 15, after two years' illness. He was born in California City, Mo., in 1864. He graduated from the medical department of Washington University of St. Louis in the eighties. He practiced for a number of years in Missouri and in 1891 settled in Portland, after spending several years studying in Vienna, Berlin and Paris. He was a successful practitioner and established a large practice.

Dr. Henry C. Jefferds, of Portland, Ore., died July 22, from cerebral hemmorrhage. He was born at Kennebunkport, Me., in 1860. He graduated from Yale University in 1882. Later he graduated from Hahnemann Medical College, Philadelphia, following which he was interne in a New York hospital. He practiced in Banger, Me., until 1889, when he located in Portland, where he practiced until the time of his death. He was well known among the physicians of the city and for years had a large and successful practice.

Dr. Harvey G. Arbuckle died in Seattle, July 1, at the age of 32 years. He was ill for two weeks with meningitis following influenza. He formerly practiced in Spokane and recently moved to Seattle.

Dr. Henry S. Pernot, of Corvallis, Ore., died at Portland, July 3, aged 57, from uremic poisoning. He was born in Ohio and settled in Corvallis in 1889, where he practiced until his death.

Dr. Henry Mitchell, of Odessa, Wash., died July 6, aged 74.



Edited by GEORGE W. SWIFT, M. D.

ANESTHETICS AND ANESTHETISTS

The time has come in our progress in the standardization of hospitals to consider anesthetics and anesthetists. The first group of men to feel the restrictions and to receive the benefits of standardization were the surgeons. As a group it can be stated that the surgeons entered into the spirit of standardization with a certain degree of skepticism. When the management of the hospitals realized the surgeons were demanding certain things for the benefit of the hospital and the patient, their requests were readily granted.

Those of our profession who handle cases of internal medicine have not been as emphatic in their demands upon the hospital managements and have not received, perhaps, as marked consideration as this branch of medicine demands. However, as time goes on, dietitians are being placed in increasing numbers in the various hospitals. The advent of insulin in the treatment of diabetes has brought forcibly to the attention of the hospitals the necessity for dietitians, and the importance of a regular diet.

Incidentally, it has filled our hospitals with a class of patients requiring skilled treatment, who have previously been neglected. Contrary to expectation, the hospitals are finding cases of internal medicine are not as expensive and not nearly as hard to care for in large numbers as they had believed. In fact, several surgical hospitals are today considering limiting their field to medical cases. What a surprising thing for the surgeons should this occur!

The new problems of standardization are those of refinement rather than basic problems and one of them has to deal with anesthesia. At the meeting of the American Association of Anesthetists, held in San Francisco, the Northwest was well represented. At least two of the papers were presented by Seattle speakers and had to do with the record of anesthesia in our Seattle hospitals. Unconsciously there has developed already a certain standard technic for anesthesia. To be sure it is in its infancy at the present time, but a definite technic has been established in the three large centers.

Briefly, it consists of the preparation of a graphic chart, giving a complete study of the anesthetic, the blood pressure readings, pulse readings, respiration and any occurrence out of the ordinary. The various stages of the operation are marked off on the anesthetic chart. The operator may have a carbon copy for his own record, the hospital is furnished one for its record, the anesthetist keeps a copy and the Association of Anesthetists in the city is given a copy.

At the present time there are 1,000 accurate records on file. In Seattle there are eight men following this technic, in Tacoma there are three and in Spokane three. The technic is simple, it does not require any more mechanical skill to give an anesthetic scientifically and to keep a scientific record than it does to give a slovenly one and have no record whatsoever. If the anesthetist is not furnishing you with this type of an anesthetic record, you are not receiving full value for your fee.

One of the problems discussed in San Francisco was the stand that the anesthetists should take in regard to nurses giving anesthetics and to laymen in general entering this field. It does not seem in the province of hospital standardization to settle this problem, when the American Medical Association has not been willing to do so nor has the American College of Surgeons seen fit to take a definite stand. As a matter of fact, there is no argument in favor of nurses giving anesthetics. No nurse will ever be able to compete with an intelligent physician, who is willing to give an anesthetic scientifically, who is willing to cooperate whole-heartedly in his work with the surgeon, and is willing at the same time to do his work without demanding too large a fee. The same rule, of course, applies to the x-ray men in the argument against lay technicians and to pathologists in the arugment against laymen in their work.

A surgical fee is based upon a certain more or less definite schedule. At one time the surgeon made his diagnosis by the use of his fingertips and at the time of operation the surgical fee was the only fee collected. At the present time not only does the surgeon have to comply with the standards regarding the diagnosis prior to the operation, but he makes use of the internist from the clinical standpoint, the pathologist from the laboratory standpoint, the roentgenologist from that standpoint and during operation the anesthetist from that standpoint. At least one and possibly two assistants must be accounted for.

To be sure the surgeon does not pay all of the fees, but all of those who assist either in making a diagnosis or in performing the operation are now eventually paid for their services. In such cases the surgeon must be responsible to the patient for the ultimate fees. What the pathologist charges for his private cases or the radiologist for his is not the concern of any other group. When the physicians who wish to specialize in anesthesia realize that they have got to give service of a more scientific character than can be given by any nurse and at a moderate price, and, secondly, when the hospitals can supply trained physicians who can deliver this type of service, then the question of trained nurses giving anesthetics will pass.

From the standpoint of standardization, it might be well, however, to consider the inauguration of some special plan. No plan can be accepted in a standardized hospital which has as its foundation the establishment of a department of anesthesia based upon lay organization. On the contrary, any department of anesthesia in a standardized hospital must of necessity be based upon scientific work. The problem thus becomes simplified. A department of anesthesia will solve such questions on a purely scientific and economic basis.

BOOK REVIEWS

Edited by KENELM WINSLOW, M. D.

Legal Medicine and Toxicology. By many specialists. Edited by Frederick Peterson, M.D., Manager Craig Colony for Epileptics; Walter S. Haines, M.D., late Professor of Chemistry, Materia Medica and Toxicology, Rush Medical College; and Ralph W. Webster, M.D., Assistant Professor of Medical Jurisprudence, Rush Medical College. Second Edition. Two Octavo volumes, totaling 2,268 pages, with 334 illustrations, including 10 insets in colors. Philadelphia and London: W. B. Saunders Company. 1923, Cloth, $20.00 net.

Aside from the three well known men named as authors of this volume, there are thirty-nine contributors, including such men as Pearce Bailey, Alphonse Bertillon, Charles G. Chaddock, John Chalmers DaCosta, Smith Ely Jelliffe, Dean Lewis, Harold Moyer and many others, whose names are not so well known to the reviewer. In view of this personnel the reader would expect an exceptional presentation of the subjects covered and he will not be disappointed.

The chapter on "Legal Rights and Obligations of Physicians" should be read by every medical man in active practice. It discusses the contract of physician with patient and patient with physician, malpractice, both civl and crminal, and many other points which are of paramount importance to the physician. Bailey contributes an article on "Injuries and Disorders of the Nervous System following Railway and Allied Accidents," and in the forty-five pages allowed him admirably covers in necessarily condensed manner the organic and functional results following such accidents. A rather interesting feature, to psychiatrists particularly, is the "Summaries of State Laws relating to the Insane." This monograph is made possible by permission of the National Committee for Mental Hygiene of New York.

The second volume is given over almost entirely to toxicology and methods of medicolegal examinations from the standpoint of chemistry. This volume should be extremely valuable for reference. It seems superfluous to state that the work is by far the best in its field that has as yet been offered to the profession.

A. P. Calhoun

Nosography in Modern Internal Medicine. By Knud Faber, M. D., Professor of Internal Medicine, University of Copenhagen. Introduction by Rufus Cole, M. D., Director of Hospital, Rockefeller Institute. Cloth, 222 pp. $3.75. Paul B. Hoeber, New York, 1923.

In this volume the writer traces the development of nosography, or the clinical description of diseases, from most ancient times as influenced by the various national leaders in medicine. It begins with Hippocrates, who was among the first to describe the various clinical pictures which in their entirety make up what we know as entities or specific diseases. It was not until the seventeenth century that Sydenham revived interest in descriptive medicine thru his careful and systematic bedside observations. He taught the necessity of setting aside all the wild hypotheses of the time and getting down to observed clinical phenomena in great numbers of cases and their systematic classification.

The author goes on to describe the influence of the leading schools of medical theory and practice in the different countries in the succeeding centuries. In the beginning of the ninteenth century physical diagnosis began with the discovery of Laennec's stethescope and physiologic advances caused functional diagnosis to come into use. Then, with the advent of bacteriology, the etiologic basis of medicine was first established.

This is the present desideratum for a solid foundation of the systematic classification of medicine and nosography. The discovery of the mendelian theory of heredity in 1902, in respect to plants, has been applied to hereditary diseases with remarkable accuracy, as in the case of hemophilia, myoclonus-epilepsy and cancer, and has opened up new fields for investigation.

Notwithstanding all the newer discoveries and advances in bacteriology, pathology, physiology and chemistry, the careful clinical observation of disease still holds its own in correlating all the latest theories and scientific discoveries in medicine. Most of the great names in medicine have been those of clinical observers and the same circumstance is likely to hold till the end. This book is particularly to be commended in giving the reader a broad and historical review of the growth and development of the art and science of medicine.

Winslow.

The Infant and Young Child. Its Care and Feeding from Birth until School Age. A Manual for Mothers. By John Lovett Morse, M. D. Edwin T. Wyman, M. D., and Louis Webb Hill, M. D., of Harvard Medical School and Children's Hospital, Boston. 12 mo. of 271 pages, illustrated. Philadelphia and London; W. B. Saunders Company, 1923. Cloth, $1.75 net.

This is primarily a mother's manual. Some twenty-eight chapters deal with the bath, clothing, feeding, weaning, milk modification, feeding during infancy to school age, growth and development, care and training, diseases, emergencies and home medication. Chapter IX on artificial feeding still hangs on to percentage mixtures, which seem to rapidly be giving place to whole milk mixtures. They also seem to believe in rather frequent feedings, whereas most of the pediatrists today rather encourage either the three or four interval from birth.

They are ultra-conservative also in starting a mixed diet or so-called baby soft diet, the tendency today being to start about the sixth rather than the ninth month. Their dietetic tables on feeding from one to six years are excellent, and there are many excellent recipes in their chapter on feeding. The chapters on training, education and traveling with a child are excellent. There is a very concise yet descriptive chapter on contagious diseases, written in language to be easily comprehended by the layman.

The book closes with a chapter each on emergencies and medical supplies for the child, the former dealing with what to do until the doctor comes and the latter with common household drugs and dosage. It is a most excellent work in answering common questions asked the doctor by the average mother. It will help them to take better care of the well child and to understand how to carry out the doctor's instructions when the child is ill.

Moon.

Practical Local Anesthesia and Its Surgical Technic. By Robert Emmett Farr. M. D., F. A. C. S. Minneapolis, Minn. Illustrated with 219 engravings and 16 plates 530 pp. $8.00 Lea & Febiger. Philadelphia & New York. 1923.

Not a few good books have been published on local anesthesia, but the present one by Farr differs from these in a number of ways. In the first place, it is written by a surgeon who is able to incorporate many suggestions in surgical technic, with the descriptions of the type of anesthesia employed in a practical operation. He also enumerates surgical conditions, for which he has employed local anesthesia according to different methods. His methods of operation and anesthesia induction are in many ways ingenious and unusual and he constantly emphasizes the importance of considering the psychic aspect in relation to each operation. By following him the average surgeon could learn much of value for the comfort of his patient and speed in operation. His chapter on the complications and mortality of the different forms of general anesthesia makes an argument of the strongest kind for the use of local methods were these at all possible. The book is well illustrated and original in its methods of procedure.

Forbes.

Tonsillectomy by Means of the Alveolar Eminence of the Manible and a Guillotine, with a Review of the Collateral Issues. By Greenfield Sluder, M. D., F. A. C. S., Clinical Professor and Director of the Department of Rhinology and Otology, Washington University School of Medicine, St. Louis, Mo. 90 Illustrations. C. V. Mosby Company, St. Louis, 1923.

The text is divided into seven chapters or subdivisions which consider the subject of tonsillectomy in its various phases from embryology to the technic of operation.

The volume can be recommended to the specialist and general practitioner alike as it is the product of an original matured scientific mind and a master of surgical technic. Altho it deals more especially with the "Sluder Technic", it has a wealth of material applicable to other methods, and statistics are not wanting, when they strengthen the author's own view point. It is not too much to state that this monograph is the most concise, accurate and complete treatise on the tonsil, especially the operative technic, up to the present time and is worthy the careful study of all interested in this rather hazy and not too well understood subject.

Chase

Medical Axioms, Aphorisms and Clinical Memoranda. By James Alexander Lindsay, M. A., M. D., F. R. C. P. Professor of Medicine of Queen's University at Belfast, etc. 192 pp. $2.25. Paul B. Hoeber. New York. 1923.

This is a valuable little volume. It is not a discourse on medicine, but it contains many apt statements and pertinent declarations, which every physician ought to know, but many of which are forgotten in the routine of practice. They refer to different parts of the body, such as lungs and pleura, the cardiovascular system, digestive and nervous system. It is a handy book to refresh one's memory on vital points under all these heads.

Recovery Record for Use in Tuberculosis. By Gerald B. Webb, M. D. Consulting Physician, Cragmore, Glockner, and Sunnycrest Sanatoria, etc., and Charles T. Ryder, M. D., Colorado School of Tuberculosis. Colrado Springs. 80 pp. $2.00 Paul B. Hoeber. New York. 1923.

This book emphasizes the necessity of records in the treatment of tuberculosis There are chapters devoted to convalescense, record of recovery, technic of recovery, hygiene of recovery, accidents and obstacles. The patient who will peruse this volume will receive much assistance in the course of recovery from this disease. Half of the volume consists of chart sheets for the patient's use in keeping his temperature and pulse records, with space for questions to be asked his physician.

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Epidemiology and Public Health. A Text and Reference Book for Physicians, Medical Students and Health Workers. In Three Volumes. By Victor C. Vaughan, M.D., LL.D. Assisted by Henry F. Vaughan, M.S., Dr. P.H., Commissioner of Health, City of Detroit, and George T. Palmer, M.S., Dr. P.H., Epidemeologist of Detroit. Vol. 11. Nutitional Disorders, Alimentary Infections and Percutaneous Infections. Cloth, 915 pp. $9.00. C. C. Mosby Co., St. Louis. 1923.

This is an extraordinarily interesting and valuable book. None other is so complete and exhaustive nor so thoroly modern. The high reputation of Victor Vaughan is fully sustained by this monumental work. In speaking of scurvy it is pointed out that all infants on heated milk should receive orange juice as early as one month of age because, if one waits as late as the sixth month, the common prac tice, a prescorbutic state will ensue. In regard to pellagra Vaughan leans to an unbalanced and inadequate diet as the cause. The daily ration of corn pone and bacon is the common and unvaried meal of the pellagrin in the South. The disease is a rural one and attacks women chiefly. Vaughan believes that it is rural because of the limitation of diet as compared with that of the city, and feminine because the woman sacrifices the best to the males of the family. Cholera infantum, it is shown, is not only acute milk poisoning but depends largely on sanitation. It occurs chiefly in crowded tenements and avoidance of crowding and intense heat is as essential as clean milk.

The discussion of typhoid fever prophylaxis is most illuminating. There were 1,529 cases of typhoid among over four million vaccinated men in our last war. Of 248 vaccinated men, in one instance, 98 developed typhoid after a massive infection. While vaccination against typhoid is the crowning success of war sanitation yet it is not proof against severe infection. The French Army would have been rendered hors de combat, if typhoid had not been checked by vaccination. No more instructive and complete discussion concerning endemic goiter than that herein can be found. Notwithstanding the epochal work by Marine and Kimball in preventing goiter by use of iodine, the writer leans to McCarrison's infection theory of etiology. This bears out the old dictum that boiling water prevents goiter. Plummer reconciles the two theories, it will be remembered, by regarding intestinal miscroorganisms as preventing absorption of iodine from food. Space prevents us from further notice of this invaluable treatise.

WINSLOW.

Physiotherapy Technic. A Manual of Applied Physics. By C. M. Sampson, M.D. Formerly of the Physiotherapy Service, Walter Reed U. S. Army General Hospital, Washington, D. C., etc. With eighty-five illustrations. 443 pp. $6.50. C. V. Mosby Company, St. Louis. 1923.

The author states that practically every step in every technic given in this book is based upon research, both in the laboratory and clinic. The results have been checked so that there could not be accused prejudice of the methods. They were proven in the great flood of cases passed thru various clinics in the war reconstruction hospitals. He claims that it is proven that physiotherapy has more than made good and is destined to be the salvation of therapy. The book deals with various forms of heat, among which is diathermy, which in reality conversive heat, the most valuable form of heat used in therapy. There are chapters on autocondensation, actinotherapy, the sinusoidal current, massage, hydrotherapy and many other forms of physical treatment. If one wishes to study the application of physical methods and the various forms of electrical appliances this book will furnish much information.

SMITH.

Health Building and Life Extension. By Eugene Lyman Fisk, M.D., Medical Director Life Extension Institute New York. 521 pp. The MacMillan Company. New York. 1923.

This book is the outcome of a study of health conditions in industry undertaken by the Life Extension Institute. The investigations leading up to it were undertaken for the purpose of ascertaining the degree of waste arising in industry from ill health and physical insufficiency. Part one deals with the physical state of civilized man; part two considers the problem of industrial health and working capacity; part three treats preventive, medical, remedial and constructive measures. There is a chapter on physical trauma, followed by one on psychic trauma as the result of disease, worry, grief, overwork, discouragement, etc. A chapter on physical apathy is followed by one on psychic apathy indicated by a lack of life interest, lack of initiative, lack of sustained application to work. Many phases of this general subject are considered, which suggest many new ideas to the reader.

SMITH.

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ORIGINAL CONTRIBUTIONS

EXPERIMENTAL PROPHYLACTIC INOCULATION AGAINST ROCKY MOUNTAIN SPOTTED FEVER*

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NEW YORK CITY
From the Laboratories of The Rockefeller Institute for Medical Research

The first symposium on Rocky Mountain spotted fever, held in this city in 1908, was memorable because of the presentation of several contributions to the knowledge of the disease which have become classical, notably those of Maxey, Stewart, Smith, Ricketts and Tuttle[1]. Seldom have more exhaustive and careful epidemiologic, clinical and experimental studies been done on any recently recognized disease than those reported at that conference on spotted fever. Today, fifteen years later, when a second symposium on the same disease has convened, it is my privilege to be able to present a brief report of my studies on prophylactic vaccination.

It is gratifying that most of the distinguished contributors to the first symposium are present today, tho we are reminded again of the great loss which experimental medicine in general, and the problem of spotted fever in particular, suffered in the early death of Ricketts. Ricketts was very close to a solution of spotted fever prevention at the time of that conference, having succeeded in producing active immunity in guinea pigs by means of a slightly underneutralized mixture of spotted fever virus and immune guinea pig serum[2]. Injection of such a mixture into guinea pigs produced a mild infection and conferred complete immunity to subsequent inoculation. A similar procedure was already known at that time in the case of hog cholera, and the hog cholera serovaccine has been used with much success in combatting that disease, but for human immunization this kind of vaccine was out of the question, because of the slight excess of virus—enough to bring about a mild infection—without which it was thought that no immunity could be induced. At the point where the problem was left by Ricketts, therefore, no safe procedure for prophylactic vaccination of human beings had been developed.

I was at first interested chiefly in the question of causative agent of spotted fever and worked for several years without being able to reach any definite conclusion as to the rôle of the so-called Rickettsia, first described by Ricketts[3], later in more detail by Wolbach[4], and more recently by Nicholson[5]. In experimental research with a disease as fatal as spotted fever, and one in which no known therapeutic measures were effective, I came to feel that we ought to concentrate our effort more than hitherto on the question of prophylaxis. As already stated, Ricketts had employed an underneutralized virus-immune-serum mixture, but no systematic experimental work had ever been carried out to determine whether or not any immunity would develop after the injection of a neutral mixture of virus and immune serum, the assumption in the negative having apparently remained unquestioned.

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*Read before South Idaho District Medical Society, Boise, Ida., Apr. 14, 1923.

On taking up the problem, my first step was to determine this point experimentally, and it was found that a guinea pig inoculated with a neutral mixture of virus and immune rabbit serum showed no symptoms of infection, but when tested subsequently with virulent virus was completely resistant. Further experiments demonstrated that many times the neutralizing dose of immune serum might be mixed with the virus without depriving it of its immunizing property. The animals remained immune for at least thirteen months, this being the longest interval after which vaccinated animals have so far been tested.

The state of immunity is not due to the injection of the immune serum, since the passive immunity conferred on guinea pigs by the inoculation of immune rabbit serum persists only about a week. The degree of protection induced by the neutral mixtures is such that even 1,000 m.l.d. of the virus is borne without any sign of infection. Moreover, the neutralizing titre of the blood serum of vaccinated guinea pigs is by no means an index of the degree of immunity present, being far inferior to the actual immunity demonstrated by the enormous resistance to subsequent inoculation.

The serum of the guinea pig is employed as virus in the serovaccine, a virus of uniformly high virulence (for example, such that 1 c.c. contains 100 m.l.d.) being readily maintained in guinea pigs. Serum from infected rabbits is unsuitable because of its inconstant and usually low virulence. A powerful virus requires a correspondingly greater number of immune body units for neutralization, and an immune serum of low potency (such as prepared in horses, for example) would have to be used in larger volume than is possible in the preparation of vaccine. The serum of rabbits which have passed thru a typical spotted fever infection and have received a second injection of virus during convalescence has a titre such that 0.1 c.c. completely neutralizes 100 m.l.d. of virus, and such a neutral mixture confers complete immunity on the guinea pigs, as does also a mixture containing the same amount of virus and ten times the neutralizing quantity of serum.

When a series of fractions of the neutral mixture were injected, it was found that a point is reached at which the serum becomes too highly diluted in the animal body to be active, while a corresponding dilution of the mixture still contains enough virus to produce typical infection. For example, 1/100 part of a neutral mixture containing 100 m.l.d. will still be infective; on the other hand, if the mixture contains 10 times the neutralizing dose of serum, 1/100 part will not be infective, because the serum is still present in sufficient quantity to neutralize 1 m.l.d. of virus. The advantage of employing a sufficient excess of the immune serum is obvious, for the larger the animal the greater the dilution which the serum undergoes *in vivo,* and the greater the necessity of an excess of the serum. In the case of human vaccination, the necessity of strictly quantitative control over the virulence of the virus and the potency of the immune serum is evident, and considerable training and experience in this particular kind of laboratory procedure are absolutely essential.

The next point to determine was whether there is any other way of producing immunity than by means of the active serovaccine, the preparation and use of which are so exacting. So far no other method of preparation has yielded a vaccine with protective power approaching it. Ricketts and his coworkers had already shown the inefficacy of the killed virus as vaccine, and my experiments wholly confirmed this point. With regard to the effect of heating and age upon the neutral or overneutralized mixture of virus and immune serum, however, some interesting results were obtained. It was expected that a total loss of immunizing property would result from heating the mixture to 56-60° C. for 10 minutes, since the virus is killed at this temperature, but experiment did not justify this assumption. Animals inoculated with the heated serovaccine acquired a certain degree of immunity; the infection in these animals was usually mild, seldom fatal, and presented a striking contrast to the character of the disease in unvaccinated guinea pigs or in those inoculated with virus alone, whether heat-killed or inactive by standing. The aged mixture of virus and immun serum (kept 32 days at 4° C.) had an effect somewhat similar to that of the heated mixture. The only explanation for the persistence of a degree of immunizing power in the superneutral mixture after heating or on standing is the possible acquisition by the virus of a greater resistance to unfavorable physical factors in the presence of specific immune substance. Whatever the ultimate explanation may be, the fact that it is possible at all to produce a certain degree of immunity by means of heated serovaccine is of practical significance, and this mild mode of immunization, with killed virus as one of the components of the vaccine, is worth trying in human beings, since it involves no risk and yet is likely to produce a degree of immunity which, if not enough to prevent infection altogether, will perhaps be sufficient to modify the course of the disease to a less severe type.

Another phase of the immunity problem is the use of the immune serum in case of impending infection. Experiments on guinea pigs showed that the injection of 0.1 c.c. of a potent immune rabbit serum into a guinea pig within 1 to 4 days after inoculation with 1 m.l.d. of virus prevented the development of any infection, while the same amount of serum modified the infection to a mild or nonfatal one, even if given as late as 5 to 7 days in some instances. The immune rabbit serum is most suitable for this purpose because its titre is far higher than that of any other large animal. Calculated on the basis of corresponding body weight, 20 c.c. of a serum which has a titre of 0.1 c.c. against 100 m.l.d., as determined in guinea pigs, may be given to a man of 200 pounds. A large rabbit would, therefore, furnish sufficient serum for two or three persons. The serum should not be given after fever has set in, for at that time it has no beneficial effect in experimental infection in guinea pigs, even when used in enormous quantities.

Dr. R. R. Spencer, of the U. S. Public Health service at Hamilton, Montana, suggested at the recent conference at Missoula that all ticks detached from the body should be examined for Rickettsia, and that in case of positive findings an injection of immune serum might be administered. Dr. Spencer has successfully used Giemsa's stain for smears fixed in Regaud's fluid. If a more rapid method of staining is desired, the use of buffered formalin[‡] as fixative and subsequent staining with fuchsin, or gentian violet, as described by Miss Tilden for staining *Treponema pallidum,* will be found to bring out the Rickettsia very distinctly. A few seconds only are required for the action of these stains. If Giemsa solution is used after buffered formalin fixation, the preparations must be left in the stain for one hour at room temperature. Prolonged Giemsa staining is often less satisfactory, because overstaining results in the precipitation of red granules.

I wish to express my indebtedness to Dr. R. R. Parker, of the U. S. Public Health Service, Hamilton, Montana, thru whose kind cooperation the virus and ticks used in this study were obtained.

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MAINTENANCE OF THE VIRUS OF ROCKY MOUNTAIN SPOTTED FEVER IN NATURE WITH PARTICULAR REFERENCE TO CONDITIONS IN THE BITTER ROOT VALLEY

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HAMILTON, MONT.
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The studies made in the Bitter Root Valley by Dr. H. T. Ricketts during the period of 1906 to 1909 indicated that Rocky Mountain spotted fever is normally a disease of small wild mammals; that it is transmitted by the bite of a wood tick; and that its maintenance is not dependent in any way upon human infection.

Because of these findings a cooperative pathologic, entomologic and zoologic investigation had been planned to study the disease as it exists in nature. This venture was scarcely initiated, however, when the unfortunate death of Dr. Ricketts brought it to an end. Except for the work of Dr. McClintic of the Public Health Service in 1911 and 1912, which was likewise terminated by an accidental infection, no further work along this line was attempted until the Service again took up the problem in 1921, the Montana State Board of Entomology having in the meantime made observations suggestive of its value.

During this interval entomologic studies on the life history and habits of the tick were carried on by Professor R. A. Cooley of the State College, and by Messrs. Hunter, Bishopp and King of the Federal Bureau of Entomology. These resulted in findings which suggested means of controlling the infection by the control of its transmitting agent, the wood tick. Control work, as thus far carried on in the Bitter Root valley, has been principally based on the entomologic data then secured. In an area of similar size, more favorably situated, there is every reason to believe the same amount of effort would have resulted in practically complete control; but, under the very difficult conditions prevailing in the Bitter Root region, progress has been slow and the results secured lack the permanency which is much to be desired, if attainable.

[‡] Eighty-eight parts of M/15 Na_2HPO_4 + 12 parts of M/15 KH_2PO_4 (pH 7.6). Nine parts of this solution are added to one part of commercial formaldehyde solution.

[*] Read before South Idaho District Medical Society, Boise, Ida., Apr. 14, 1923.

Knowing this, the question as to whether or not a more extensive knowledge of the conditions which contribute to the maintenance of the infection in nature might point to a more satisfactory control procedure, has continually presented itself. That studies along this line might yield information of value was thought possible because the accumulated epidemiologic data indicated that some natural control agency is operative in nature.

Whatever this agency may be, its presence has been suggested by an apparent cycle in the occurrence of human cases both in regions and in localized areas of infection. This periodical occurrence of cases has been observed too frequently to be attributable to chance alone. If a natural control actually takes place, and if the conditions that make it operative can be sorted out of the spotted fever complex which exists in nature, it may be that the knowledge thus gained can be turned to practical use. To try to solve this puzzle is one of the problems upon which the Public Health Service is now working. It is not the purpose of this paper to go into details of this investigation but merely to discuss the spotted fever complex in a general way.

On the basis of our present knowledge it seems reasonable to assume that the following factors contribute to the maintenance of spotted fever:

1. Stage to stage transmission of the virus by the wood tick, **Dermacentor venustus**;
2. Stage to stage transmission of the virus by the rabbit tick, **Heamaphysalis leporis-palustris**; and
3. The starting of new "lines" of infection in ticks by the feeding of noninfective ticks on the blood of an infected host.

The importance of each of these main factors is controlled by environmental conditions, such as:

1. The species of host animals present.
2. The relative abundance, distribution and habits of host species.
3. The susceptibility of host species to infection.
4. The habits of the tick species.
5. The character of any region concerned.
6. Conditions which may affect the existence of, or the infectivity of, the virus as it occurs in ticks.

This, then, is the complex upon which we are working.

It has been suggested that the etiologic agent of spotted fever may be a parasite of the tick, rather than that the tick acts as an intermediate host. There is no special evidence at present to support this idea, but, even if it should be true, there are no apparent avenues for the spread of the infection among ticks except those listed above, unless it be by the act of copulation.

1. *Stage to stage transmisisson of the virus by the wood tick.*

The transmission of spotted fever virus from larva to nymph, nymph to adult, female to egg, and egg to larva has been amply demonstrated. The value of this means of maintaining the virus is limited by two conditions:

1. The high mortality rate among the ticks; and
2. By the effect of environmental conditions on the virus in ticks.

Our knowledge of the complicated life history of the wood tick and of its relative abundance from year to year make it certain that these ticks are subject to a very high mortality rate; so high, in fact, that the average chance that more than a few of the young of an infected female will reach maturity and reproduce is quite small. This high death rate is due to starvation (because of failure to secure a host), unfavorable conditions of environment (e. g., temperature, moisture) and, doubtless, to some extent, to efforts of host animals to rid themselves of infesting ticks. Of importance in this connection is the possibility that not over fifty per cent of infected females transmit the infection to their offspring. Even when such transmission occurs, it is not certain that all daughter ticks will be infected. Be that as it may, it is certain that the potential value of stage to stage transmission in maintaining the virus is greatly lessened by a high mortality among the ticks, even if other adverse conditions are not involved.

The consideration of the effect of environmental conditions on the virus in ticks comes next. There is no definite information on this subject but some of our observations suggest that there are conditions that are unfavorable to the continued existence of the virus. Such conditions may, perhaps, exist in the tick itself or, possibly, some external condition, such as temperature or moisture, may be concerned; perhaps both.

Whether or not, under favorable condition, the virus of spotted fever can be indefinitely maintained in the descendants of an infected female is not known but it is felt to be doubtful, if stage to stage transmission alone is sufficient to maintain the disease in nature over extended periods of time. It is certain, however, that it must be considered as a contributing factor.

2. *Stage to stage transmission of the virus by the rabbit tick.*

The rabbit tick has but recently been shown to be infective and our data suggest that stage to stage transmission takes place as in the wood tick. This tick is found on all species of native rabbits, infesting some to a greater extent than others. It does not bite man. Therefore, our interest in this tick is concerned with the extent to which its ability to transmit the fever affects the occurrence of the virus in the wood tick. Since all species of rabbits are hosts of both species of ticks, it is evident that these rodents are media thru which infection may be passed on from rabbit ticks to wood ticks.

What percentage of tick infection originates from this source?

Can the rabbit tick carry the infection over periods which are unfavorable for wood tick infection?

Does the passage of the virus thru rabbits and rabbit ticks affect the virulence of the virus, when subsequently acquired by the wood ticks?

These are some of the questions suggested but they cannot be answered at the present time. That some part of wood tick infection is derived thru rabbits cannot be doubted and in sagebrush areas, such as Eastern Montana and Southern Idaho, the percentage is probably large. The fever in wild rabbits is usually very mild, and only a very mild type of infection is found in rabbit ticks, as our recent studies have shown. Perhaps these points may have some bearing on the mild type of human infection which occurs in areas of the northwest which support a large rabbit population, and in which it seems certain that the infection passes thru rabbits much more frequently than in the Bitter Root region.

The conditions noted above (i. e., mortality rate and environmental conditions) as affecting the continuity and infectivity of the virus in successive generations of wood ticks must also play a similar role in the rabbit tick. In comparing the two ticks from this standpoint, however, the following points should be considered;

1. The correlation of habits of rabbits and the rabbit tick are such that the chance that the offspring of a female rabbit tick will reach maturity is doubtless greater than for the wood tick.

2. The average number of rabbit ticks per animal greatly exceeds that of the wood ticks (on rodents that are hosts of immature ticks).

3. The rabbit tick is probably able to transmit infection from two to three times as often as the wood tick, since it is likely that the former completes its life cycle in one year, whereas the latter requires at least two years.

4. With respect to environmental conditions, such as temperature and moisture, the rabbit tick, because of the type of country frequented by its hosts, is subject to less extreme conditions.

In closing this part of the discussion the most that can be said is that there is much to learn about the relation of the rabbit tick to spotted fever and to the maintenance of the virus.

3. *The starting of new "lines" of infection in ticks by the feeding of noninfective ticks on the blood of an infected host.*

It does not seem possible to doubt that new "lines" of tick infection are started by the feeding of noninfected ticks on the blood of infected hosts. Certainly the starting of new tick infections in this way contributes to the maintenance of the virus but the value of this contribution depends, first, on the number of infections thus started and, second, on the dangers that attend stage to stage transmission. The number of infections thus started is determined by such factors as (1) the available number of nonimmune individuals of susceptible species of rodents and their distribution (distribution is largely determined by the character of the country); (2) the number of ticks; (3) meteriologic conditions (which affect the activity of both the ticks and their hosts); (4) the habits of ticks; (5) the habits of host animals; (6) the number and availability of adult tick hosts, and (7) such conditions as determine the infectivity of the virus in ticks. Factors, such as rodent abundance, tick abundance and others of those mentioned, vary from year to year and in different localities and regions of infection. Hence it follows that the number of new infections started in ticks will also vary according to year and locality.

This variation, then, should result in corresponding increases and decreases in the number of infective ticks. That such is the case seems to be indicated by the alternate increases and decreases in the number of human cases which have been previously referred to as occurring in many areas of infection. If this apparent correlation actually exists, then there should be some justification for feeling that the starting of new tick infections each year is more fundamental as a means of maintaining the virus than is stage to stage transmission, and it would follow that the latter means alone is not all-sufficient. This would point to some one or more of the factors that control the number of new tick infections as the keystone of control. However, this is interesting at the present time purely from a speculative standpoint and it is useless in this paper to attempt to penetrate further into the spotted fever complex.

For several reasons the actual field work has thus far been confined almost entirely to the Bitter Root region of infection, and, in concluding, a few of the results secured during the first season's work will be noted.

The percentage of infected ticks that occur in nature has always been an interesting question. During 1922 tests of over 5,000 adults showed a minimum of 1.6 per cent to be infected. The actual percentage can be conservatively placed at 2.

Three hundred and twenty-two tests were completed with immature fever ticks from rodents and more than 20 per cent of the infested rodents were found to be carrying infected ticks. Tests of those secured from ground squirrels showed a minimum infection of 2.4 per cent. Of infested snowshoe rabbits 35 per cent carried infected ticks. Porcupines, hitherto unsuspected, were found to be important hosts of adult ticks and our results suggest that they are susceptible to infection.

Our knowledge of the rabbit tick in the fever complex was added to by the discovery that several species of grouse are efficient hosts of its immature stages. Infected ticks were among those secured. Game birds, then, play a role in spotted fever as hosts of an infective species of tick and as agents in their distribution. Rabbits and grouse inhabit the same type of country and their habits have much in common.

Field studies in the Bitter Root region deal with two sets of conditions with respect to the ticks, mountain conditions and valley conditions. Infected ticks are present in both mountains and valley, but animal population (both large and small mammals), animal distribution, tick habits and many other conditions are different. It was found last year that the percentage of infected ticks was much higher in the mountains than in the valley, our tests showing a minimum of about 5 per cent. These high percentages of infection were found among the ticks collected from the mountain goat ranges high up on the mountain sides. Furthermore, mountain goats examined carried approximately the same proportion of infected ticks. It seems evident that the infection is carried to the canyon floors from these mountainside areas and thence out to the valley.

It is interesting that mountain goats, a species that is not itself susceptible to infection, is largely responsible for the large number of infected ticks. This happens because it is practically the only animal in the localities concerned and is important as a host of adult ticks. Its elimination would certainly greatly reduce the number and probably, indirectly, the percentage of infected ticks in the mountain canyons. To what extent this would affect the valley infection is not yet apparent but it certainly should improve conditions at the mouths of the canyons, where infection is usually heavier than in the valley proper.

The above discussion of the factors that contribute to the maintenance of Rocky Mountain spotted fever has necessarily been somewhat brief, but sufficient, however, to indicate that it is a complex problem. There is little chance that it can be solved except by an investigation planned on a broad basis and continued for a period of several years. Whatever the outcome of such an investigation may be, it will result in securing considerable data that will be of value wherever the application of control measures may be desirable.

Epidemic Transient Diaphragmatic Spasm. George C. Payne, Richmond, Va., and Charles Armstrong, Washington, D. C. (Journal A. M. A., Sept 1, 1922), report on the nature of a disease which was epidemic in Virginia in June, 1888, and in May or June, 1923. The disease was characterized by acute onset with epigastric pain, difficulty in breathing, fever, tenderness along the lower ribs and duration varying from one day to three weeks. In the epidemic of 1923. it has been most prevalent in the northeastern portion of the state, affecting rural areas more than urban, and children more than adults. It has caused no deaths, but in some cases it has led to serious sequelae. It is believed to be due to an infection, but the nature of the virus has not been determined. Prodromal symptoms were usually absent. The attack nearly always began suddenly and without warning, with severe epigastric pain. The pain later extended to one or both sides of the lower part of the thorax. In nearly all cases, the temperature rose at the time of onset, and soon reached its maximum, which varied from 101 to 105. Profuse perspiration was the rule. More than half of the patients questioned complained of headache. The only death reported was in a woman who developed an acute endocarditis after recovery from this illness.

THE CLINICAL IMPORTANCE OF THE VITAL CAPACITY OF THE LUNGS*

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The present era in the development of clinical medicine is so definitely characterized by the introduction of new instrumental methods in diagnosis that it is not without interest to find an old method, which has been known to several generations of medical men, but which had been relegated to the background for nearly half a century, beginning to assume again a practical importance in the study of disease in man. Recent investigations on the physiology and pathology of the heart and lungs have given a new significance to the determination of the vital capacity of the lungs, and many physicians are finding that even so simple an instrument as the spirometer is capable of giving information which is of distinct value in the diagnosis and prognosis of pulmonary and circulatory conditions.

The vital capacity of the lungs consists of the volume of the deepest possible expiration after the greatest possible inspiration. A certain amount of air, known as the residual air, remains in the lungs after complete expiration, but the vital capacity represents the degree of movability of the lungs and anything which interferes with the movement of the lungs, preventing the entrance of air into them, causes a decrease in the vital capacity. The measurement of the vital capacity is carried out by means of a spirometer, the simplest and most satisfactory form of which is similar to an ordinary gasometer, in which an accurately balanced bell floats above a tank of water. The subject whose vital capacity is to be determined takes the deepest possible inspiration, blows out thru a tube connecting with the spirometer, and the volume of the expired air is observed directly from the rise of the bell. The test should always be made with the subjects in the same position and it is best to have them either standing or sitting erect, for the vital capacity is usually 200 to 300 c.c. lower when taken with the subject lying down. Three to five expirations should be made and the largest of these should be taken as the vital capacity.

This is exactly the same method as was described in 1846 in the classical article by John Hutchinson, "On the Capacity of the Lungs and on the Respiratory Functions, with a View of Establishing a Precise and Easy Method of Detecting Disease by the Spirometer." The instruments in use today show very few improvements over that devised by Hutchinson nearly eighty years ago and used by him in the first important study of the subject. Indeed, the more carefully one reads the work of Hutchinson the more one is impressed with the fact that most of what we know today was foreshadowed in his admirable monograph.

Hutchinson was not the first to attempt to determine the vital capacity of the lungs, but all of his predecessors had used crude methods and made few observations, whereas, as he says, this is the type of investigation which "demands for its solution a multitude of experiments, almost without limitation." The care which he took to fulfill his critical requirements is illustrated by the fact that he examined 2130 persons of different types, including sailors, paupers, Royal Horse Guards, Woolwich Marines, draymen, girls, and even gentlemen. Altho Hutchinson appreciated the effect of disease on the vital capacity and gave striking illustrations of the value of determinations of the vital capacity of the lungs in the diagnosis and prognosis of pulmonary tuberculosis, he saw from the outset that the importance of spirometry as an aid to the clinician depends largely on the possibility of establishing reliable normal standards, deviation from which would indicate a pathologic condition. For this reason, in sad contrast to much present-day, so-called "scientific" work, he devoted by far the greater part of his attention to the study of what we should call the "normal control."

He was the first to realize that the magnitude of the capacity of the lungs depends on other bodily functions and to attempt to determine with what function it is most closely related. His conclusions were that the three factors having the most marked effect on the vital capacity of the lungs in normal persons are weight, height and age. Height was found to have the greatest influence and he says that "for every inch of height (from 5 feet to 6 feet) 8 additional cubic inches of air, at 60°, are given out by a forced expiration." The effect of weight was found to be more irregular than that of height and, except with abnormal obesity, of not so much importance as height. Age appeared to have less influence than either height or weight but Hutchinson states that the vital capacity increases from 15 to 35 and decreases from 35 to 65 years. The circumference of the chest, the length of the trunk, and the size of the chest as determined by plaster casts were studied and seemed to have little effect, but slight changes in the vital capacity due to posture were described.

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Many investigators since the time of Hutchinson have attempted to define normal standards of vital capacity which would be wholly satisfactory in the sense that deviations from them might be regarded as of definite pathologic significance. This has, however, not been entirely possible and it is extremely improbable that absolute standards will ever be found, for even if the more important factors such as weight, height, sex, and age are taken into consideration, there will always be certain apparently normal individuals, in whom the vital capacity will fall outside of the accepted normal limits. The practical problem, therefore, is to find normal standards which will include as large a percentage of healthy subjects as possible, and at the same time will exclude as nearly as possible all whose vital capacity has been diminished by disease. This is most satisfactorily accomplished at present by the correlation of vital capacity with body surface area.

The method devised by West is particularly easy, for he found that the average vital capacity of young men is approximately 2.5 liters per square meter of body surface area and that of young women approximately 2.0 liters per square meter. The area of body surface is readily determined from the height and weight by means of the chart of DuBois and DuBois so that in West's calculations the three great determining factors of height, weight, and sex are accounted for. The soundness of this method has recently been confirmed by Hewlett and Jackson in a careful statistical study of the vital capacity of 400 men between the ages of 18 and 30 years, which proves that the vital capacity can be more accurately correlated with height and weight than with either separately. Of West's group of 129 normals, only 5.5 per cent had a vital capacity more than 10 per cent below the normal standard, but the observations of Hewlett and Jackson, on a much larger series of subjects, indicates that the normal variation is considerably greater and that about 10 per cent of normals will have a vital capacity more than 15 per cent below the normal standards.

An even more simple method of determining the deviation from the theoretical normal vital capacity has recently been devised by Myers (Myers, J. A., *Am. Rev. Tuberc.,* 1923, VII, 161) as the result of observations on 1280 young men between the ages of 17 and 32 years, and 1058 women from 17 to 23 years old. Myers has published tables from which the percentage of normal vital capacity can be determined, if either the body weight or the sitting height of the subject is known, and has thus made is possible to do away with all mathematical calculations. The table for males is as satisfactory as can be expected, for only 11.4 per cent of the observations fall below 85 per cent of the normal, but Myers suggests that the figures for females are probably too high, as 27.1 per cent of his group had vital capacities below 85 per cent of the accepted normal. Most of the figures thus far reported relate to young adults and they are probably applicable to persons between the ages of 18 and 50 years, but beyond these limits other standards or corrections are necessary.

Emerson and Greene showed that there is a close relation between vital capacity and surface area in children, and Wilson and Edwards found the average vital capacity of children from 6 to 16 years of age to be slightly under 2.0 liters per square meter surface area. They call attention to the fact that the average difference between the two sexes (3.5 per cent) is much less than in the adult group (20 per cent), but observations on larger numbers of children are highly desirable. Very little has been published as to the alterations of vital capacity after the fifth decade, but Bowen found that there is a considerable fall in the decade between 50 and 60 years, and that it may be 50 per cent below normal at 85 years. More information on this phase of the subject is greatly needed.

Even when these points have been studied and the influence of height, weight, age and sex have been worked out as carefully as possible, we may still expect to be confronted by the infinitely more baffling effects on the vital capacity of different habits of life. Physical exercise and athletic training, for instance, tend to increase the vital capacity, while a sedentary existence exerts its influence in the opposite direction, but the effects do not appear to be constant and it is doubtful whether they can ever be satisfactorily expressed quantitatively. As is many other bodily functions, such as pulse rate, respiration rate, and even temperature, one must accept the fact that there will always be certain individual variations from general standards of normality. It is important to appreciate, however, that this does not detract essentially from the value of such normal standards. It merely indicates that individual findings should be interpreted with judgment and in the light of broad experience, in exactly the same way that it is necessary to interpret many other findings in clinical medicine, and it illustrates the general importance of a knowledge of this as of other functions in any individual while in a normal state.

Before referring to the alterations in the vital capacity of the lungs which occur in different specific diseases, it will be well to consider the fundamental physiologic significance of such alterations, and make clear the general type of information that may be obtained by means of spirometry. A decrease in the vital capacity may occur in many clinical conditions, and it is not of direct or specific diagnostic moment. The determination of the vital capacity is to be regarded purely as an index of the functional capacity of one part of the respiratory mechanism and particularly as a means of obtaining information as to a diminution of its normal reserve power. Just as the phenolsulphonethalein test gives information regarding some, but not all, of the functions of the kidney, so the determination of the vital capacity gives an insight into one function of the lungs.

The physiologic activities of the external respiration may be broadly grouped into two categories—those which are related to the pulmonary movements, the expansion and collapse of the lungs, and those which have to do with the respiratory membrane. As a respiratory membrane, the function of the lungs is essentially to promote the interchange of gases between the blood and the air in the alveoli, and this has only an indirect relationship to the vital capacity. The movement of the lungs, on the other hand, by which the ventilation of the alveoli is brought about, is very directly dependent on the vital capacity, because it is this factor that determines in great part the extent of the expansibility of the lungs and thus the possible extent of the pulmonary ventilation. The practical importance of the adaptability of pulmonary movements to bodily needs is self-evident, for an increase in pulmonary ventilation almost necessarily accompanies any increase in metabolism, whether this be due to exercise, to fever or to some other stimulant.

When a man lies quietly at rest, his bodily activities are nearly at a minimum and his total metabolism is approximately what we regard as "basal." In this state his oxygen requirements are small and the necessary amount of oxygen is easily supplied to the arterial blood by slow and rather shallow breathing. The minute-volume of pulmonary ventilation is low. With any increase in muscular activity the organism will require more oxygen and the absorption of this additional oxygen, as well as the elimination of increased amounts of carbon dioxide, is accomplished by increasing the minute-volume of air which is brought into contact with the blood in the capillaries of the lungs. This rise in minute-volume is brought about by increasing both the rate and depth of breathing and the highest minute-volume that any individual is capable of maintaining will depend on his ability to increase the rate and depth of breathing and on the balance between rate and depth.

Actual experiments on healthy young men performing extremely hard exercise show that they have a minute-volume of about ten times what they have at complete rest. This difference between the minute-volume of air breathed at rest and the highest minute-volume that can be maintained represents what may be called the "pulmonary reserve" —the reserve power of the external respiratory mechanism to be called on in time of need. The "pulmonary reserve" depends on both the rate and depth of breathing but of these two factors the ability to increase rate is at once the least important and the least affected by pathologic conditions. The rate at which the respiration can be carried on effectively and continuously is quite definitely limited and even with hard exercise it is unusual to find rates much above 35 per minute. The most important factor, therefore, in increasing the minute volume of air breathed is the depth of breathing, and as a corrolary to this, it is evident that the limits to which the minute-volume can be increased and to which the pulmonary mechanism can be adjusted to the needs of the body will depend very largely on the ability to increase the depth of the respiration. It is here that the vital capacity of the lungs becomes the prominent determining factor, for the ability to breathe deeply depends very largely on the vital capacity of the lungs. It is obviously impossible to use the total volume of the vital capacity for continuous respiration and even under the most favorable circumstances only a comparatively small proportion is available.

In a series of normal young men, who rode a stationary bicycle until they were forced to stop on account of dyspnea, it was found that at the end, when the minute-volume was greatest, they were using on the average only one-third of their vital capacity at each respiration. In general, therefore, one may say that a normal man with a vital capacity of 4800 c.c., who breathes 400 c.c. per respiration, while he is quietly at rest, will be able, when he is exercising violently, to increase the depth of his respiration about four times, or to 1600 c.c. per respiration, this being one-third of his vital capacity. If, on the other hand, owing to some pathologic condition, his vital capacity is reduced, let us say, to 2100 c.c. the same subject will be able to increase the depth of his respiration from 400 c.c., at rest, to only 700 c.c., when he is exercising. With a rate of respiration of 35 per minute he would be able to keep up a minute-volume of 56 liters in the first instance but only of 25 liters in the second. Whereas, in his normal state he could theoretically carry on his metabolism at about ten times its normal level so that he could run a race, his condition would be such when his vital capacity was reduced that he could only meet a five-fold increase in metabolism and would become short of breath walking rapidly upstairs.

The decrease in vital capacity may thus give a fairly accurate indication of the amount of physical activity which can be undertaken without the production of dyspnea. Indeed, if one knows the degree to which the vital capacity is decreased, it is often possible to calculate the maximum minute-volume which a patient can maintain and foretell how much physical exercise he is capable of without undue shortness of breath. The determination of the vital capacity of the lungs is, therefore, an important means of obtaining information concerning the functional capacity of the external respiration.

What has been said so far should not, of course, be taken to suggest that changes in the vital capacity of the lungs are the only factors in the production of dyspnea. This is obviously far from being the case. Even among normal individuals with vital capacities of equal size there is a wide variation in the tendency to dyspnea. Physical training and the development of skeletal muscle determine the ability to keep up continuously a high pulmonary ventilation without fatigue, while the character of the heart muscle, the rate of circulation, the morphology and chemical constitution of the blood and the state of the respiratory membrane are but some of the other factors which may affect the delivery of oxygen to the tissues, and the removal of carbon dioxide, and thus play a role in the production of dyspnea. Nevertheless, in certain pathologic conditions dyspnea is due very largely to an inability to increase the ventilation of the lungs, and it is important, as well as interesting, to the clinician that this decrease in the reserve power of a vital function can be followed in a quantitative way by means of spirometry.

Having discussed in some detail the general significance of the vital capacity of the lungs, we may now turn to a consideration of the subject in its relation to disease. There are many conditions which may cause a decrease in the vital capacity. Anything which intereferes with the respiratory movements of the thorax may do it—general muscular weakness, as after prolonged infections, calcifications of costal cartilages, arthritis and similar conditions affecting the mobility of the ribs, as well as intraabdominal conditions which inhibit the descent of the diaghragm. Pleural effusion or pleural pain may act in the same way. Inflammatory and infiltrative lesions affecting the lung substance, such as pneumonia, tuberculosis and carcinoma decrease the vital capacity by obliteration of air spaces as well as by interference with lung mobility. In emphysema an alteration of the elasticity of the lung associated with inability to collapse decreases the vital capacity. In heart disease still another element enters in and the lowering of the vital capacity depends in part on increased pressure in the pulmonary circulation and engorgement of the pulmonary vessels. Finally, of course, in any given case several of these factors may be operative at the same time, so that in a severely decompensated cardiac patient the low vital capacity may be due to circulatory disturbances, pleural effusion, pulmonary infarct and a superimposed bronchitis.

If, therefore, the situation is so complex, and such a variety of causes may bring about changes in the vital capacity of the lungs, one may well ask what it is that spirometry has to offer to the clinician. It is quite evident that it offers nothing of a specific diagnostic nature. Like many other clinical methods, such as the determination of the temperature, the leucocyte count, the presence of albumin in the urine, or the gastric acidity, it merely indicates a general type of process and leaves it to the observer to discover the underlying cause and to interpret its significance. But the determination of the vital capacity goes a little farther, for it gives, within certain limits, an idea of the extent of the process. It has a quantitative value. It shows tht the funcion of pulmonary ventilation is affected and it indicates the degree of the pathologic condition. It supplements the history, physical examination, and x-ray examinations by giving additional information as to the functional capacity of the lungs. Not infrequently it gives indirect evidence of the extent of anatomic involvement of the lungs and in many cases of acute tuberculosis or carcinoma of the lungs. The vital capacity changes indicate an involvement much greater than is suggested by the physical signs and correspond closely with the x-ray and autopsy findings. Sometimes, indeed, the changes in vital capacity appear to follow the progress of the disease even more accurately than the x-ray pictures. As a functional test, it gives an indication of the "pulmonary reserve," and in heart disease enables one to tell, while the patient is still in bed, just about how much physical activity he is capable of without developing dyspnea. The determination of the vital capacity at intervals of time gives much information as to the course of the disease, and, as it is a quantitative method, it can be used for graphic expression, by means of charts which are often excellent records of the progress of the case. Spirometry may also serve as a valuable check on the history, especially as regards the history of dyspnea, which may be either understated or exaggerated. Thus, a patient with heart disease who says he has no dyspnea on exertion may be found to have a low vital capacity, and it is discovered that the absence of the symptom is due to the very limited life he leads. Or a patient, who complains of great dyspnea on exertion, is found to have a normal vital capacity and the suggestion is clear that the symptom is probably due, not to organic disease, but to some nervous factor in his condition. This point has often been of assistance in differentiating cases of so-called "effort syndrome," in which the physical examination suggested the possibility of the dyspnea being due to early cardiac disease.

(*To be concluded*)

SOME ASPECTS OF THE INNERVATION OF THE LUNG

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There are certain features of the nerve supply of the lung which should be of interest to both the internist and the surgeon who has occasion to deal with this organ. The information to be found on the subject in treatises on anatomy is limited, and the physiologists have not always agreed among themselves on this subject. It is with the hope, therefore, of throwing some light from an anatomic standpoint on certain obscure conditions and relations within the lung that this summary is presented.

The investigations on which it is based necessitated special neurologic technic, particularly the intravitam methylene-blue method of staining. As human material was not available soon enough after death to make possible success with this method, dogs, cats and rabbits were employed for most of the work. Sufficient study of human material by other histologic methods was possible so that a general similarity of distribution and arrangement of nerve fibers in the human lung and the lungs of the animals employed is indicated. There are certain points of difference, but these need not enter into the present account.

The researches of Dr. W. S. Miller, extended over a period of more than thirty years, have given us a comprehensive account of the structure of the lung, including its blood-vascular supply, its lymphatic system, and the arrangement of the bronchial musculature, and also clean-cut ideas regarding the bronchial tree and air-sacs. We shall therefore attempt to follow only the nerve trunks and their branches from the point of entrance into the lung, at the hilum, to their various terminations, motor and sensory, with some attention to the intrapulmonary ganglia and the relations of the plexuses.

The anterior and posterior pulmonary plexuses send their fibers into the lungs along the main bronchi and the bases of the pulmonary arteries. Within the lung these fibers are rearranged into two main plexuses, one about the main stem bronchus, and the other about the pulmonary artery and its branches. The plexus about the bronchus may be subdivided into two portions, according to their position with respect to the cartilaginous plates which form the framework of all save the smallest bronchi and the bronchioles. The larger nerve trunks, composed in large part of myelinated fibers, form a network of longitudinal mesh outside the layer of cartilage plates—therefore between these plates and the lung parenchyma—which we may designate the extrachondrial plexus. Numerous clusters of ganglion cells are found in this plexus, usually located at the points of anastomosis of the nerve trunks which compose it. No ganglion cells are found beyond the bronchi of the third order, and only few and scattering ones are usually found distal to the secondary bronchi.

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The fibers of the extrachondrial plexus are derived from the vagus. They consist of afferent fibers and preganglionic efferent fibers. The cells of the afferent fibers are located in the nodose ganglion, while the preganglionic efferent fibers have their origin from cells in the motor X nucleus of the medulla oblongata. The afferent fibers terminate as afferent receptors in different branches of the bronchial tree, as will be described below. The preganglionic efferent fibers terminate about the ganglion cells, to which reference has just been made, as pericellular synaptic networks. Axonic processes from these cells relay the impulse to the motor terminations in the smooth muscle cells of the bronchial musculature, and possibly to the mucous glands, as will be more fully described below. On the efferent side there is present, therefore, a typical preganglionic and postganglionic neurone chain.

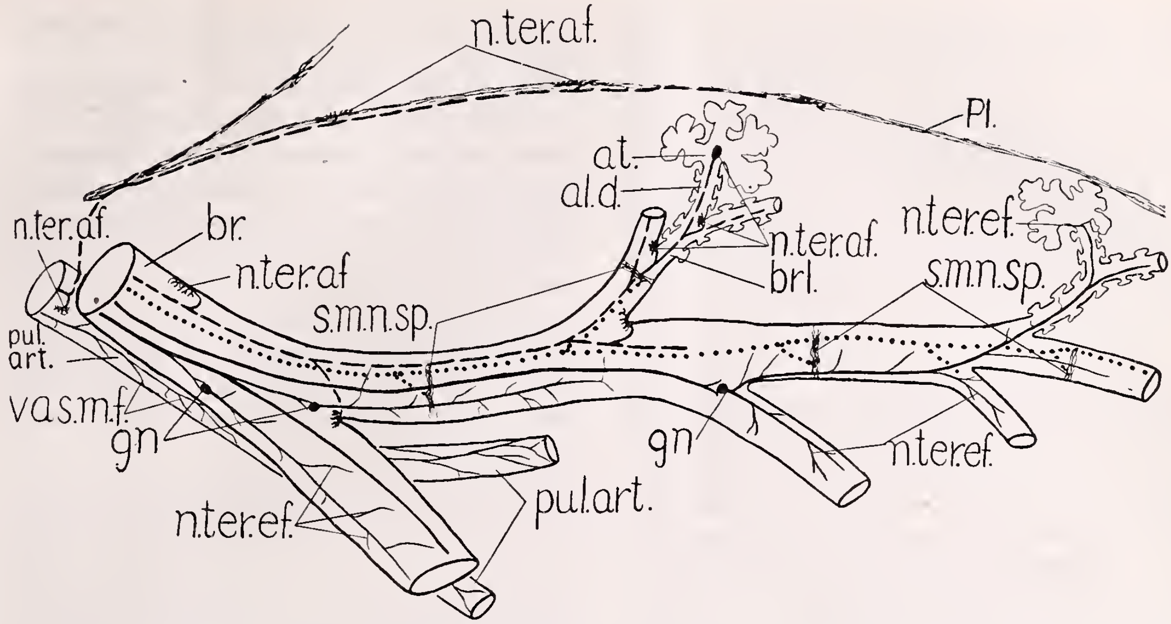
The second of the two plexuses about the bronchi lies between the cartilage plates and the bronchial muscle bands, with some of its fibers extending to the epithelium. It will be designated as the subchondrial plexus. The plexus is also made up of two kinds of fibers, afferent and efferent. The afferent fibers are continuations of the afferent fibers which course thru the extrachondrial plexus, to terminate in the epithelium or muscle bands as receptor organs. The efferent fibers of the subchondrial plexus are the postganglionic fibers to which reference was made in the preceding paragraph, which have their origin for the most part in the ganglionic cells of the extrachondrial plexus. A relatively small number apparently have as their source cells of the posterior and anterior pulmonary plexuses. The ganglia of these plexuses differ from those within the lung, to all appearance, only is position. A few ganglion cells are also found in the subchondrial plexus in some forms, and these also give rise to fibers which terminate in the same manner as those above named.

The extrachondrial and subchondrial plexuses are separate as far peripherally in the course of the various orders of bronchi as cartilaginous plates are present. Beyond these points such fibers of the extrachondrial plexus as remain fuse with the subchondrial plexus, and the two continue distally as a single network. This gives off afferent and efferent fibers at various points in the smaller bronchi. These points correspond to those of the larger bronchi which are innervated by the several types of nerve fibers respectively.

Without entering into details of structure we may now consider the afferent receptors and their points of location. The first to be encountered within the bronchus proper is found in the epithelium of the bronchial wall. It is a free nerve ending, the terminal twigs of which branch out among the columnar epithelial cells of the bronchial mucosa. These endings are apparently stimulated by objects which may come into contact with the epithelial surface, such as foreign bodies and masses of mucus. Nerve terminations of somewhat different type are found at the division points of the bronchi into their primary, secondary and tertiary branches. At these points the nerve endings are less diffuse in their branching, and the entire structure has a somewhat rounded contour, altho no capsule is present. They are located in the epithelium at the apex of the crotch between dividing bronchi. Their appearance and location give one the impression that these endings receive their stimulation ordinarily from pressure of the bronchus on either side, as the lung collapses in expiration.

W. S. Miller has repeatedly called attention to the division points of the bronchi as the key points of pulmonary anatomy. In addition to other structures, here are found aggregations of lymphoid tissue, frequently in the form of small nodules. Enlargement of such nodules as a result of infection, as in tuberculosis, undoubtedly produces pressure on the neighboring nerve endings in the crotches of the bronchi. This may, in part at least, account for the sensation of deep seated pain in certain pulmonary conditions.

Nerve terminations at the division points of the bronchi are found as far peripherally as the points of bifurcation of the respiratory bronchioli to form the alveolar ducts. This far distally they are of very small size, and are only occasionally encountered in my preparations.



This paper as read was illustrated by twenty-four lantern slides. The principal features of these slides are here combined in diagrammatic form. This diagram is of a portion of the bronchial tree and accompanying pulmonary artery and of a portion of the pulmonary pleura, to illustrate the distribution of the nerve plexuses and nerve terminations of various types. Adapted in part after W. S. Miller.

al.d., alveolar duct; **at.**, atrium; **br.**, bronchus; **brl.**, bronchiole; **gn.**, ganglion; **n.ter.af.** nerve termination of afferent fiber; **n.ter.ef.**, nerve termination of efferent fiber; **Pl.**, visceral pleura; **pul. art.**, pulmonary artery; **s.m.n.sp.**, smooth muscle nerve spindle; **vas.m.f.**, vasomotor fibres.

The motor fibers to the bronchial musculature, both pre- and postganglionic, are indicated as solid lines, as are also the vasomotor fibers on the pulmonary artery. The afferent fibers from nerve terminations in the epithelium of the bronchial rami are represented in broken lines, as are the fibers which lead to the nerve endings in the pleura. The fibers to the smooth muscle spindles, in the bronchial muscle bands, are indicated by dotted lines.

In the walls of the atria or air-spaces, into which the alveolar ducts open, and which are lined with respiratory epithelium, there is present a quite different type of nerve ending. This type is oval in outline and is flattened. It is covered by a thin capsule, part of which is formed by the squamous epithelium of the atrial wall. Beyond this point no nerve endings of any kind were observed.

The afferent receptors in the epithelium of the bronchi of the various orders would appear to be responsible, on proper stimulation, for initiating the cough reflex. Chevalier Jackson has shown clinically that stimulation of the bronchi, either by contact or by inflammatory processes, will produce coughing for a short period. If the stimulating agent is continued at one point for a number of minutes, a "tolerance" is established, but the reflex may be again elicited by stimulating another portion of the epithelium. Dr. Burget and I have obtained similar results in experimental animals, in work as yet unpublished. In these animals the point stimulated was observed with the aid of the fluoroscope.

Jackson states that "the finer subdivisions of the tracheobronchial tree, which together with the alveoli are not enterable with a bronchoscope but are enterable with a slender instrument, show decidedly less cough production from instrumental contact, and in most cases all peripheral areas show no cough reflex unless the proximity of the visceral pleura is reached and pushed on. This pleural reflex is very rarely observed, and its existence is somewhat doubtful." The statement concerning the pleural reflex is very interesting, in view of the limited distribution, anatomically, of nerve fibers and endings in the visceral pleura, as will appear below.

We may now turn our attention to quite a different type of termination, which is found in the bands of smooth muscle that make up the bronchial musculature or muscle of Reisseisen. The fibers which lead to these endings are large and myelinated. On approaching their destination they subdivide into a number of branches. Each branch reaches a separate muscle band, on which it forms a spindle-shaped termination. Some of the short terminal twigs of this ending embrace the muscle band, others penetrate between the individual smooth muscle fibers to terminate as small knobs among the latter. I have called these endings "smooth-muscle nerve spindles" because of their general similarity to the nerve-muscle spindles of striated muscle, and to the sensory spindles in tendon, both of which have long been known. "Smooth-muscle nerve spindles" are present in the muscle bands of all the orders of bronchi, down to bronchioles. I have not found them in the latter or in the alveolar ducts. From their position and the relation of the terminal twigs they are apparently stimulated by contraction or relaxation of the muscle bands, in much the same manner as the neuromuscular spindles of skeletal muscle.

If we examine the pulmonary pleura after vital staining with methylene-blue, we again find a nerve plexus in certain regions, and nerve endings of afferent type. The plexus is derived from the second chief plexus, to which reference was made in the early part of this paper, namely, the plexus about the pulmonary artery. Myelinated fibers from this plexus pass to the visceral pleura in the region of the hilum, reaching the interlobar pleura. They are distributed especially along the interlobar margins. None have been observed in the pleura of the lateral or the diaphragmatic surfaces of the lung, or even on the diaphragmatic margins. The main bundles break up into smaller ones, which in turn ramify as individual fibers. The fibers terminate in endings of the free-branching afferent type, in the regions noted. This is true of dogs and rabbits. In the human I have been unable to demonstrate nerve endings anywhere in the pleura, but I ascribe this to the usually embalmed autopsy material, which was unsuited to the special methods of technic necessary to bring out nerve terminations. Fresh material, when available within a few hours after death, will undoubtedly reveal pleural nerve endings in the human also.

The source of the fibers to these various receptors is of interest to physician and physiologist alike. Molhant and Möllgaard have shown that nerve cells in the nodose ganglion undergo chromatolytic changes on ablation of one or more lobes of the lung. It has also been demonstrated (Larsell and Mason) that nearly all of the nerve terminations within the rabbit's lung disappear after experimental degeneration of the vagus. This, however, does not hold true for the endings in the visceral pleura, which appear to be just as numerous in well stained preparations after vagotomy as in normal animals. Möllgaard has demonstrated in dogs and kittens that the lungs receive fibers from 1st., 2nd. and 3rd. thoracic spinal ganglia. These fibers pass thru the white rami to the middle and inferior cervical ganglia, and thence to the lungs by way of the pulmonary plexus.

It is evident, therefore, that the vagus supplies the afferent fibers to the bronchial tree, and the visceral pleura is supplied thru the mediation of the sympathetic trunk. The possibility remains that the few nerve endings which remain within the lung after degeneration of the vagus on one side are also derived from the sympathetic trunk. It appears far more likely that they represent the terminations of fibers which have crossed over from the opposite vagus. There is considerable crossing of vagus fibers in the pulmonary plexuses, as Schiff pointed out many years ago.

The position of nerve terminations at the division points of the bronchi and at the interlobar marginal surfaces of the visceral pleura suggest interesting relations of the nervous system to respiratory regulation. These, however, we must leave to the physiologist. A complete anatomic basis for the Hering-Breuer phenomena appears to be present. The slow, deep inspiration which follows double vagotomy is conceivably arrested at its maximum thru stimulation of the nerve endings in the visceral pleura by contact of the interlobar margins. Afferent fibers from the sympathetic trunk may thus in a sense take over certain functions which normally belong to the vagus, but at a lesser degree of distention of the lung.

Turning our attention to the efferent nerve fibers which are present in the lung, we find that preganglionic fibers from the vagus terminate as pericellular synaptic networks, as already noted, about the ganglion cells in the bronchial walls. These networks disappear almost entirely after unilateral degeneration of the vagus. The few which remain without doubt are derived from the opposite vagus.

The ganglion cells send their axones, which thus constitute postganglionic fibers and which make up the greater part of the subchondrial plexus, to the muscle bands of the bronchi, where the terminal twigs end in relation to the individual smooth muscle cells in the typical manner of smooth muscle motor nerve endings. Such nerve fibers are present in all branches of the bronchial tree as far distally as the ends of the alveolar ducts, where the latter open into the atria. Miller has described at this point a sphincter-like band of muscle, but beyond this point no muscle is to be found which belongs to the bronchial tree.

The bronchial mucous secreting glands also receive excitor fibers from the subchondrial plexus.

Concerning the source of the fibers to the glands, whether from intrapulmonary ganglion cells or from ganglia of the sympathetic trunk, I have no clear evidence. Irrespective of their origin, they are probably of importance in accounting in part, at least, for the large amount of secretion at certain stages of tuberculosis. Miller has pointed out the relation of lymphoid tissue and areas of inflammatory processes within the lung to many of the nerve trunks, in a case of pulmonary tuberculosis. He suggests that the increased activity of the mucous glands may be due to irritation of the nerves and ganglia by the zones of inflamed tissue, thru which some of the nerve trunks pass. The demonstration of fibers of motor type terminating in the bronchial mucous glands merely emphasizes Miller's suggestion. The anatomic basis is present in complete detail.

The second main plexus to which attention was called at the beginning of this paper, namely, that surrounding the pulmonary artery, is composed entirely, to all appearance, of fibers from the sympathetic trunk. No ganglia are found in this plexus. Near the hilum of the lung, where the artery is separated from the main bronchus by a relatively thin mass of connective tissue, ganglia are present which might be considered as belonging to the artery. A study of the distribution of their fibers, however, shows that they are bronchial ganglia.

The periarterial plexus contains numerous myelinated fibers, together with unmyelinated, near the base of the artery, but more distally unmyelinated fibers only are present. The myelinated fibers pass, in part, to afferent terminations in the wall of the base of the pulmonary artery itself; and in larger part to the interlobar pleura, where they give rise to the plexuses and terminations above described in the pleura.

The unmyelinated fibers pass to the tunica media of the pulmonary artery and its branches, there to terminate as motor endings in the smooth muscle cells. Such terminations are found in all branches of the artery, including the arterioles. I have also observed some evidence of a very delicate plexus of nerve fibers on the pulmonary capillaries.

The question of vasomotor control within the lung has been a mooted one. It is only recently that Wiggers has summarized the evidence on this subject, which on the whole favors the view that a mechanism for such control is present, from the standpoint of the physiologist. The demonstration of nerve fibers terminating in the smooth muscle cells of the arterioles gives also an anatomic basis for the assumption that vasomotor action is present within the lung.

The possible bearings of this fact on certain pulmonary conditions will present themselves. Also the question is raised if the relief obtained from the administration of adrenalin in certain cases of asthma may not be due in part to the constrictor action of this drug on the pulmonary arterioles, rather than altogether to its opposite action on the bronchial musculature.

The presentation of the nerve supply of the lung from an anatomic standpoint, it is hoped will give the physiologist and the physician a firm foundation, on which to build a structure of experimental and clinical observation which may add to our knowledge of the hitherto obscure role of the nervous system in the activities and disorders of the lung.

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Isolation of Bacterium Pneumosintes from Influenda Patients. From the nasopharyngeal secretions of six patients in the early hours of typical, uncomplicated epidemic influenza during the epidemic of January and February, 1923, Peter K. Olitsky and James E. McCartney, New York (Journal A. M. A., Sept. 1, 1923), observed in five instances an active agent, pathogenic for rabbits. On culture of the filtered secretions and of the lungs of rabbits inoculated intratracheally with these materials, four new strains of Bacterium pneumosintes have been isolated, one directly from the secretions and three from the rabbits' lungs.

INFLUENZA AND INFLUENZAL PNEUMONIA*

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In the subject under discussion in this communication the term, influenza, is used to signify that pandemic disease which was so prevalent thruout this country during 1918-19. The term, influenzal pneumonia, is used to signify the disease influenza, complicated by an inflammatory process in the lung, caused by some complicating organism. The term, influenza, has been so generally used in regard to this pandemic disease that this name will undoubtedly be applied to this disease for some time, irrespective of what the etiology of the disease eventually turns out to be. It is important at the present time to realize that the disease influenza does not necessarily mean an infection with the influenza bacillus.

The question has frequently been raised as to whether the disease influenza has a definite pathology of its own and also whether this disease can be identified clinically. The work which Dr. S. B. Wolbach and I (The influenza epidemic at Camp Devens in 1918: S. B. Wolbach and C. Frothingham, accepted for publication in the *Archives of Internal Medicine*) have done on this subject makes us feel that there is a definite pathologic picture due to this disease. It also seems probable that in certain instances the disease can be recognized clinically without the existence of an epidemic.

Many of the lesions, which will be brought out in this paper and which were found in the material from the Base Hospital at Camp Devens that Dr. Wolbach and I have studied, have been described by others workers on the subject. The main object of our work has been to endeavor to separate from the numerous lesions found in the fatal cases from this epidemic the ones that are due to the disease influenza. In this communication an attempt will be made to describe the disease influenza, and also influenzal pneumonia, and to call attention to certain clinical signs which may be of assistance in making a definite diagnosis.

INFLUENZA

Etiology. The etiology of this disease is at the present time unknown. There is considerable evidence which points towards the influenza bacillus as the etiologic factor and also considerable evidence pointing towards the bacillus pneumocintes. There is not sufficient evidence, however, to definitely establish either of these organisms as the causative agent.

Th work done by Dr. Wolbach and myself makes us feel that the influenza bacillus is not the cause of the epidemic disease. For in several cases, in which the lesions were present that we think are characteristic of influenza, the influenza bacillus was not seen in the sections nor recovered by cultures at autopsy. If eventually the influenza bacillus turns out to be the cause of this disease, certain of the pulmonary lesions which at the present time are looked upon as complications will have to be considered as lesions of the disease influenza.

Pathology. Prominent among the lesions produced by the virus of the disease influenza is congestion of the upper respiratory tract. In addition to intense congestion there is an infiltration of leucocytes and lymphoid cells into the deeper layers of the mucous membrane and the underlying tissues. The leucocytes also are found wandering thru the epithelial cells of the mucous membrane itself and in some places there is a tendency to necrosis and desquamation of the epithelial layer of the mucous membrane.

In the striated muscle there is a toxic necrosis of the muscle similar to that seen in typhoid fever. The muscle fibers become necrosed either entirely or in part. If the necrosis and degeneration of the muscle fibers are extensive enough, there is a cellular reaction and sometimes a hemorrhage about the site of the lesion. No bacteria are found in these areas in the great majority of cases. As this muscle lesion goes on to repair the hemorrhage is absorbed, the leucocytes disappear, the degenerated muscle fibers regenerate, and the necrosed ones are removed by phagocytes. Finally, the disturbance heals up without any appreciable scar except possibly a slight increase in connective tissue, if the cellular reaction has been pronounced. If, as happens in some cases, secondary invading organisms reach this area, they find a fertile field for the formation of an abscess. This, of course, leaves a more definite scar.

In the adrenal gland there is a degeneration and actual necrosis of the parenchymal cells scattered in various sized areas thruout the cortex of the gland. No bacteria are found at the site of these lesions in the adrenal. The reaction to this lesion depends upon its severity and when present consists in an invasion with leucocytes. This lesion is different from the groups of lymphoid cells which are seen more frequently situated in the medullary part of the adrenal. Just what the end result of this lesion is has not been definitely established, but it presumably heals up without leaving much in the way of a permanent scar and probably there is some regeneration of the parenchymal cells of the cortex of the adrenal.

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In the testicle there is a definite lesion in the tubules, consisting of a degeneration of the epithelial cells of the tubules, so that there is an absence of the formation of spermatazoa. There is in some cases moderate edema of the interstitial connective tissue. In addition to the degeneration of the epithelial cells of the tubules there is a deposit of a hyaline-like substance about the basement membrane of the tubules which extends out among the cells of the tubules. Eventually this takes on the appearance of connective tissue, so that the basement membrane of the tubules becomes considerably thickened. In the cases in which death did not occur until several weeks after the onset of the illness the epithelial cells in these tubules with the thickened basement membrane did not show any attempt to form spermatazoa. It is possible, therefore, that in the severe cases the testicle may be so injured that it will not be able to take up the function of the formation of spermatazoa again.

Altho these lesions in the muscle, adrenal and testicle occur often enough in cases of influenza to be considered due to the virus of the disease, they are not present in every case. These lesions also are produced by the virus of certain other diseases.

There is a characteristic lesion in the lung in this epidemic disease called influenza, which is apparently due to the virus of the disease. It is not certain that the pulmonary lesion occurs in all cases and it may be that it only occurs in the more severe and prolonged cases. This lesion consists in a desquamation and degeneration of the epithelial cells lining the small bronchioles and the alveolar spaces. There is intense congestion about and actual hemorrhage into the smaller branches of the bronchial tree and into the alveolar spaces. The alveolar spaces become markedly distended, so that a definite alveolar emphysema takes place. This distension may even go on to actual rupture of the alveolar wall and the escape of air into the interstitial tissues of the lung. Just what makes the distension of the alveolar spaces is not clear but apparently the exudate in the smaller branches of the bronchial tree act as a valve which allows air to go into the alveolar spaces but is able to resist its outflow. There is also formed in the alveolar spaces a peculiar hyaline-like membrane which is apparently characteristic of this disease.

Just what is the end result of this pulmonary lesion is difficult to determine, because in all the cases which have come to a fatal termination there has been some complicating organism present with its appropriate cellular reaction. Therefore, one must speculate somewhat as to the process of repair of this pulmonary lesion in the uncomplicated cases of influenza. It is possible that uncomplicated influenza may only very rarely be a fatal disease. From a study of the tissues in these fatal complicated cases, however, it is safe to say that the epithelium of the smaller bronchi and alveolar spaces regenerates, that the hemorrhage is removed by absorption or organization, that the hyaline membrane is removed by phagocytes, enzyme action or by organization, and that the dilated air spaces probably return to normal.

Signs and Symptoms. The symptoms and physical signs vary tremendously, of course, with the severity of the disease and the extent of the process. No attempt will be made to go into all of the signs and symptoms such as may appear in any acute febrile infection but attention will just be called to the more prominent features of the disease.

The onset is sudden and the prostration comes on quickly and is very pronounced. A cough develops very shortly after the onset of the disease. The patient's skin and mucous membrane present moderate cyanosis. If the process extends into the lung, there is a sputum which is quite characteristic in that it is rather watery and distinctly hemorrhagic. This is quite in contrast to the thick rusty tenacious sputum of an ordinary pneumococcus pneumonia.

Upon physical examination there is nothing of importance, unless the lungs are involved, in which case there may be diminished respiration and moist rales in some areas. These are usually found in the mid-back, due to the fact that the process extends outward from the bronchial tree. If the pulmonary lesion has gone on to rupture of the alveoli and the escape of air into the interstitial tissues, the patient may complain of substernal distress, which within a short time is followed by the appearance of air in the loose subcutaneous tissues above the clavicles. From this point the air may extend thruout the subcutaneous tissues of the body, head and extremities. There is some question whether this subcutaneous emphysema will occur in an uncomplicated influenza. It may be that it only occurs in those cases in which the pulmonary lesion of influenza is complicated by some type of pneumonia. It is certainly a relatively rare symptom.

The clinical pathology in these cases is unimportant except for the leucocyte count, which is not elevated and is even diminished in some cases. The differential leucocyte count is not especially characteristic.

Course of the Disease. The disease is a self-limited one which tends to recover, if it is uncomplicated. The fever usually returns towards normal in the course of a few days. It is very common for it then to rise again and remain elevated for several days. It is possible that this subsequent rise means an extension of the disease into the lung or the subsequent rises may in each case signify an invasion with some secondary organism.

Treatment. There is no specific treatment for the disease. As it varies in severity tremendously in different locations and as the number and seriousness of the complications also vary tremendously, it has seemed to medical men in different parts of the country where the disease was milder that their method of treatment was so successful that it must have been almost a specific one for the disease. Careful studies, however, have failed to show that any form of treatment is of especial value.

Prophylaxis. As the etiology of this disease is not known, it is not possible to consider any specific inoculation with a dead virus as a preventive measure. A vaccine made up of the influenza bacillus, several types of the pneumococcus and some strains of the streptococcus has been tried out considerably. These attempts to vaccinate a community against the disease have usually been carried out in communities which have already been exposed to the disease and, therefore, it has been difficult to draw conclusions in regard to the result. However, in one institution in Massachusetts there was an opportunity to vaccinate every other inmate of the institution before the disease appeared within its walls, and it has been interesting to note that in this carefully controlled experiment the occurrence of the disease among the unvaccinated was no more than the vaccinated. Considerable enthusiasm was aroused at the time of the epidemic for the masking, not only of those ill with the disease and those caring for the patients, but for the masking of whole communities. It is impossible to draw any conclusions as to the value of this procedure from these experiments, but from the manner in which these masks were worn by people untrained in wearing a mask it is quite obvious that the mask would be more of a source of danger to the individual than a source of protection, if the disease is acquired thru the mouth. The mask might be of some value in preventing the extension of the disease from one actively sick, if the droplets from the nose and mouth are the method of extension, but there is no proof that such is the case.

INFLUENZAL PNEUMONIA

As has been mentioned above, influenzal pneumonia is a name that applies to the above described epidemic disease, complicated by some inflammatory process in the lung due to some complicating organism, such as the influenza bacillus, streptococcus, pneumococcus, staphylococcus or other varieties.

Pathology. The lesions produced by the virus of the influenza are present in the various organs and can be detected even in the lungs in the presence of the different types of pneumonia produced by the various complicating organisms. The secondary invading organisms produce the usual picture that they do when they occur in the lung uncomplicated, but in addition to this picture there are the lesions described above as typical of the disease influenza. No attempt will be made to describe the various lesions in the lung produced by the majority of these complicating bacteria.

Attention should be drawn, however, to the character of the lesions in the lung produced by the influenza bacillus itself, when it is superimposed upon the disease influenza, because these lesions are somewhat characteristic. In the gross the surface of the lung is very wet, due to the intense congestion and hemorrhage. The patches of bronchopneumonia are so confluent that there are large patches of solid lung. Microscopically the influenza bacillus produces a bronchopneumonia which extends laterally from the bronchi. There is congestion and hemorrhage, the deposition of fibrin, and infiltration of the lung tissue surrounding the bronchi with leucocytes of various sorts. In the lumen of the bronchial tree there is infiltration with leucocytes. This inflammatory process sometimes involves the walls of the blood vessels in the neighborhood and produces thrombosis. The process may go on to definite dilatation of the bronchi with abscess formation.

In attempts at repair there is considerable organization thruout the involved lung tissue. A striking feature of this type of bronchopneumonia is the persistence of the process. For side by side in the lungs there will be the acute inflammatory process with exudate in and dilatation of the bronchi with surrounding peribronchitis and bronchopneumonia, and also definite areas of organization where repair has become well advanced. It is in these cases, in which the inflammation in and around the bronchi is so pronounced and may go on to marked dilatation and abscess formation of the bronchi, that eventual bronchiectasic cavities are formed when healing takes place. A somewhat similar type of lung inflammation has been described in the bronchopneumonia produced by the streptococcus infections associated with measles.

Signs and Symptoms. Of course, there will be the usual signs and symptoms of the pneumonia as it would occur without the complication of the disease influenza. In the type complicated with the influenza bacillus there is a tendency for the signs to vary from day to day or from hour to hour. This apparently is due to the fact that at times the bronchopneumonia is so confluent that it presents the picture of a solid lung and then as it clears a little air comes down into the lung better and it sounds more like a bronchopneumonia. Also, due to the exudate in the bronchi at times the air is shut off from the lung so that the signs suggest fluid in pleural cavity. In these cases in which the influenza bacillus is the complicating organism the process extends from the center of the lung out towards the periphery, which will arouse one's suspicion that it may have started as a primary disturbance, due to the virus of the epidemic disease in the smaller branches of the bronchial tree.

The character of the sputum may be of assistance in these cases, because frequently the bloody liquid character to the sputum persists even in the presence of the superimposed pneumonia due to other organisms.

If abscesses should develop in the muscle, it would suggest very strongly the disease influenza in addition to the recognized pneumonia, because this necrosis of the muscle which makes a fertile field for abscess formation does not usually occur with the uncomplicated pneumonias.

The appearance of air in the subcutaneous tissues is, of course, very important evidence in favor of an influenzal pneumonia. Sometimes the air that breaks out of the alveolar spaces, instead of working into the mediastinum and out thru the subcutaneous tissues of the body, breaks into the pleural cavity and causes a collapse of the lung.

Clinical Pathology. Even in the presence of a pneumonia due to the pneumococcus the leucocyte count may remain low, if the disease influenza is present. This is not always the case, but if a low leucocyte count is found in the presence of a frank lobar pneumonia, it is suggestive of a complicating influenza.

Course of the Disease. The course of the influenzal pneumonia may be more prolonged than a straight lobar pneumonia but not always so. The tendency to pleural complications is also fairly marked and frequently, instead of a frank empyema free in the pleural cavity, there will be an inflammatory condition of the pleura, consisting of a combination of small pockets of serous fluid, dense fibrous adhesions, and small areas of pus all adjoining each other.

Treatment. The treatment of influenzal pneumonia is the nonspecific treatment of influenza, plus any specific treatment that may exist for the special type of pneumonia. Thus, for example, if the complicating organism is a type 1 pneumococcus, the type 1 antipneumococcic serum should be used. If there is no specific therapy, the usual supportive treatment for pneumonia should be carried out.

Vaccine therapy has been tried in these cases. The vaccine has been the same one that was used as a prophylactic for the disease influenza, namely, one made up of the influenza bacillus, several strains of the pneumococcus and streptococcus. Carefully controlled experiments with the use of this vaccine suggest that it is not of therapeutic value.

At the time of the epidemic considerable enthusiasm was aroused for the use of a serum obtained from a person who had recovered from an attack of influenzal pneumonia. At first it seemed as tho this serum was of value, but carefully controlled experiments with the use of this serum failed to prove that it was of any value.

Prophylaxis. There are no specific means of avoiding the development of a complicating pneumonia in cases of influenza. The same vaccine that was used as a prophylactic procedure in influenza and for the treatment of influenzal pneumonia was also studied in order to see if it would cut down the incidence of pneumonia as a complication of influenza. In the instance mentioned above, in which it was possible to carry out a carefully controlled experiment, there was no evidence that this vaccine prevented the development of complicating pneumonia in cases of influenza.

CONCLUSIONS

The disease influenza has a distinct pathology of its own. Altho several of the lesions occur in other conditions, it seems fair to assume that the virus of this disease will produce the lesions that have been described above in the striated muscle, cortex of the adrenal, tubules of the testicle and lung. The lung lesions seem to be characteristic of the disease alone.

There are certain clinical signs, such as marked prostration, liquid bloody sputum, subcutaneous emphysema, and low white count, which may make it possible to recognize this disease even when an epidemic does not exist.

Influenzal pneumonia is a complication of diseases and means the superimposing of a pneumonia due to any one of a number of organisms upon the disease influenza. It is possible to recognize the lesions of influenza even in the presence of these complicating pneumonias. The disease influenza so influences the bronchopneumonia produced by the influenza bacillus that it gives a fairly typical characteristic picture in the lung. An influenzal pneumonia may be suspected from the character of the sputum, from the presence of subcutaneous emphysema, collapse of the lung due to air in the pleural cavity, muscle abscesses and a low leucocyte count.

It is hoped that the profession will endeavor to limit the use of the term, influenza, to cases which can definitely be established as this disease, and in the same way to limit the term influenzal pneumonia. Of course, it will be impossible to diagnose a certain number of the cases, but on further study of these diseases other points may be brought out which will aid in their detection. It ought to be of benefit to those working on the problem of the study and prevention of these epidemics, if the loose use of the terms, influenza and influenzal pneumonia, should cease.

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ACUTE EMPYEMA*

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BUTTE, MONT.

Introduction. Few modes of treatment or methods of procedure in medicine or surgery are really discoveries, are really new. In some preceding age or generation a smiliar method of procedure or mode of treatment has been in vogue.

This is especially true of empyema. The word comes from the Greek and means "within" and "pus". It was used by the ancients to denote a collection of pus in either the pleural cavity or in the lung substance.

History. The first record of the symptoms and nature of empyema we find in the writings of Hippocrates. He makes frequent mention of the disease and its surgical treatment. He mentions the danger of too early operation and too rapid evacuation of the pus. That the field of operation should be washed with water for several days precediing the opening of the chest; and when the incision had been made only a small amount of pus should be allowed to escape. Directions were given that the wound should be plugged with a linen tent. This plug of linen was removed twice daily for about ten days. After that period the wound should remain open. The dangers of losing the drains and linen tent in the pleural cavity were known, and this was prevented by attaching a thread to the linen plug. Oils and warm wine were used for irrigation of the pleural cavity. These old masters also opened thru a rib that they might have a rigid structure to cork and uncork.

These methods were in vogue for the first five or six centuries. During the seventh century operative procedure lost favor because of poor results. If operation was resorted to, the cautery was used instead of the knife, this method having been introduced by the Arabians.

From this period until the sixteenth century, when an operation was performed, the directions of Hippocrates were followed. In 1579 Pare treated empyema by resection and intercostal incision. He told of the dangers of incising vessels near the ribs and of too rapid evacuation of the pus. The use of the trocar may be traced to the seventeenth century. Aspiration of the pus from the pleural cavity was used in the later part of the seventeenth and during the eighteenth century.

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*Read before the Forty-fifth Annual Meeting of Montana State Medical Association, Butte, Mont., July 11-12, 1923.

Bass was the first to suggest that air be excluded by a valvular opening.

Valpeau had lost practically all of his cases and Dupuytren had seen only four recoveries in fifty cases. A great majority of these patients were treated by aspiration. Dupuytren, himself suffering from empyema, refused operation.

Laennec, in 1819, published his monumental work on ausculation, which made the diagnosis of empyema much easier. Williams, in his writings of 1840, recommended repeated tapping and irrigation with water thru a double cannula. He also used silver nitrate and sodium chloride. A few years later Trauseau used iodine and chlorinated solutions.

Lymphatics of Chest. In order to explain the extension of an infective process, which we sometimes see in empyema, brief mention will be made of the lymphatics of the thorax and of the lungs. There are four groups:

1. A superficial group to muscles and skin which terminate in the axillary nodes.
2. The deep lymphatic vessels to the intercostal muscles and the pleura. Those vessels, which drain the external intercostal muscles, run backward and terminate in the posterior intercostal nodes. Those which drain the internal intercostal muscles and the pleura run forward and terminate in the internal mammary nodes.
3. There are two lymphatic plexuses of the diaphragm, one on the thoracic and one on the abdominal surface.
4. The lungs also have a superficial and a deep lymphatic drainage which have an anastomosis at the hilus.

Predisposing Cause. Butler states that in civil life the pneumococcus is found twice as frequently as streptococcus, and that these two organisms are the causative factors in seventy-five per cent of cases in civil practice. This seems to be borne out by our experience. In this series of fourteen cases, four were postinfluenzal, eight were postpneumonic; in one the preexisting cause was undetermined, and in one was found bacillus of Vincent's angina.

Pathogenesis. Upon the grounds of theory alone Moschoowitz thinks a different pathogenesis than that of contiguity is necessary to explain purulent infections of the pleura following pneumonia. It is probable that gross contaminations of the pleura are caused by the rupture of a small pulmonary abscess. He (Moschoowitz) reports such findings at autopsy. We seldom, if ever, see peritonitis without the rupture of an appendix or gallbladder, or the extension of an infection from the generative tract of the female. Another proof that ruptured subpleural pulmonary abscess occurs in empyema is the frequent experience that irrigation of the empyema cavity results in coughing and choking and the patient complains of tasting the liquid, showing that a communication exists with the bronchus. The localization of the empyema, whether diffuse, interlobar or mediastinal, depends on the situation of the ruptured subpleural pulmonary abscess.

In every diffuse pneumonia there is a small amount of serous fluid in the pleural cavity. When the abscess ruptures this exudate rapidly increases and is changed to a seropurulent fluid. Many writers call this period of empyema the "formative stage". If necessary to relieve pressure, aspiration should be resorted to. The patient should receive a diet high in calories of easily digested food.

When the seropurulent fluid changes into pus, adhesions form between the apposing surfaces of the pleura. These adhesions anchor the lung to the parietal pleura and chest wall. The thorax can then be opened without causing collapse of the lung. The patient has recovered from the pneumonia and is in much better physical condition. Due to the formation of adhesions, if operation is deferred until there is frank pus, nearly every empyema becomes an encapsulated one.

The profession seems to be divided in opinion concerning the value of irrigation of the empyema cavity, of rib resection and of intercostal incision.

Report of Cases. The fourteen cases treated and results obtained I offer for your consideration. The youngest patient treated was three years and the oldest sixty-five, the average being twenty-eight years. In five the pus was located on the right side and in nine on the left, while in two of those cases the empyema cavity was well above the angle of the scapula.

Three of the patients were children and a general anesthetic of ether was given; in eleven cases one per cent procain was used. All cases were operated on by intercostal incision, the incision being placed posterior to midaxillary line. The interspace chosen was the one at the most dependent portion of the empyema cavity. Two small rubber drainage tubes were inserted, extending about two and one-half centimeters within the parietal pleura. I consider that two tubes give much better drainage than one, the same as in drawing wine from a wine barrel, it being very difficult thru one opening. Two drainage tubes allow a return flow while irrigating and prevent increased pressure on lung. The skin surrounding the wound is covered with sterile vaseline and the end of the tubes covered with sterile cotton and gauze. The empyema cavity is irrigated with warm one per cent chlorazine solution (Dakin's) three times a day. The amount of solution varies with the size of the empyema cavity. Very gentle pressure is used. When the discharge ceases or becomes seromucous in character, the tubes are removed, the time varying from eight to twenty days.

The shortest period of recovery and complete healing of the wound was twenty days, the longest period of healing being forty-two days. The average time for complete healing was four weeks. Thus far we have had no recurrences. Two cases died, giving a mortality of 14.2 per cent. In our hands the complete healing and recovery, following rib resection without irrigation, has been over ten weeks. The best record I know for healing, following rib resection without irrigation, is nine weeks by Drs. Peck and Cave of Roosevelt Hospital, New York City.

Method of Healing. The method of healing of an empyema was supposed to be by obliteration of the pleural cavity, which was caused by expansion of the lung. Stoney of England, Tuffier of France, and Moschoowitz dispute this theory. They state that an empyema cavity which has been made sterile will heal and remain healed, even tho a pneumothorax still exists. In proof of this they each cite several cases.

The usual cause of an empyema's not healing is one of the following:

1. Drainage opening unfavorably placed or opening contracted.
2. Retained foreign bodies.
3. Osteomyelitis of rib.
4. Secondary empyema pockets.
5. Pulmonary fistula.

Conclusions. In civil practice the majority of empyema cases will make an uneventful recovery by intercostal incision and irrigation with Dakin's solution. The pus and plastic exudate which cover the pleura of the empyema cavity and harbor the bacteria are dissolved by this solution, thereby aiding greatly in drainage and sterilization. The time required for recovery and complete healing of the patient will be shortened from four to six weeks.

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IS REJUVENATION POSSIBLE?

Announcements have been made of the prospective coming of Professor Steinach of Vienna to lecture on the subject of rejuvenation. Operations performed on animals by Steinach, and similar operations performed on man by followers of Steinach, have been cited as evidence that they may cause rejuvenation of the body. The experiments have not been especially well controlled, and in at least two instances sudden death from apoplexy or hemmorrhage of the brain followed shortly after the operation was performed in men. Knowing what we do of the condition of the rest of the body in old age, it is not difficult to explain how such accidents occur. When the evidence is all sifted, it appears that the tying off of the sexual ducts or the transplanting of sex glands is essentially a method of sex gland stimulation. Sex gland stimulation and rejuvenation are two different things. There is no good evidence that rejuvenation can be accomplished. But we do have methods of prolonging life. The person who wants to live long can have a periodic inspection by a competent physician who will tell him where repairs are needed and indicate measures for relief. He can have a proper amount of rest and recreation, of food and of cleansing. Attention to all of those needs included under the general heading of hygiene and sanitation will go far toward lengthening the life of the human machine, just as they would in a mechanical apparatus. —Hygeia.

A CLINICAL REPORT OF THE TREATMENT OF CHRONIC SUPPURATION OF THE MIDDLE EAR BY THE IONIZATION OF ZINC*.

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This subject is not intended to interest the high brows of otology alone but should be of interest to every general practitioner, for every doctor who has a general practice has chronic suppurative ears with which to contend. I say this advisedly, for we all know how unsatisfactory the general routine treatment of these cases is. After spending a number of months in the ear clinics of Vienna, where the regular routine treatment is followed with the customary quota of failures, I became very much interested when I first saw this method in use in the Central London Hospital.

To illustrate the result of the regular routine treatment of these cases, I will direct your attention to a few of these case histories under discussion.

One is a doctor who has been treated by some of the best ear men from the Mexican line to beyond the Canadian border, with the result that he had a discharging ear for thirty-five years. Following six treatments of ionization his ear has been dry for over six months.

A woman, 44 years of age, ear discharging thirty years. After twelve treatments the ear has been dry over two months.

A very interesting case is that of a young lady who, over three years ago, awoke one morning to find she had a discharging ear. This came on with no warning. There was no pain, no soreness, no stuffiness, in fact, no other symptoms at all. Upon examination I found the skin of the ear normal, that of the canal normal and the mastoid was normal. There was a large attic perforation, containing a slight amount of pus which had no odor. The remainder of the ear seemed normal, except a small red spot on the drum head back of the middle third of the hammer handle. I ionized the ear in the usual way three times before it began to show any appreciable reaction. At the fourth treatment the scales had begun to form and upon removing them I found a small perforation where the red spot had been. This perforation involved nearly half of the middle third of the hammer handle, which was rough to the touch of the probe.

This led me to think that I was dealing with a tuberculous ear, along with the fact that there were no symptoms of inflammation at the onset, and multiple perforations. I learned later she had a suggestive family history.

The reaction increased for the next few treatments and the sloughing extended until the two perforations were converted into one, three times as large as the original. The lateral wall also broke down, exposing the bone of the promontory.

The reaction, which was rather mild, soon subsided, leaving the lesions with a very unhealthy pinkish white color. Consequently we increased the length of treatments to fifteen minutes for the next few times, with the result that we had plenty of reaction, together with a lot of pain in the ear over the whole side of the head and jaw. This lasted for a few days and gradually subsided and at the same time the damaged surfaces took on a more healthy appearance and started to heal around the edges of the different ulcerated surfaces. This lady had been under constant treatment by some of our best men with no results.

This report is based on the results obtained in the treatment of a group of cases, ranging from two months to 39 years, with an average of 14 years. The effect on the hearing has not been noted in these rases, the object of the treatment being to stop the suppuration rather than the improvement of the hearing.

The total number of treatments is 121 with an average of 13.3 per case, which range from 5 to 29. The ages of the patients average 30 years, the youngest being 11 and the oldest 57 years. The number of recurrences is two, one after two months, the other after six months, both of which had infected tonsils.

There was one failure after a trial of fourteen treatments. It was in an ear with a very small attic perforation which had been discharging eight years and had been treated by many different men, in many different ways. It had a slight amount of pus with a great amount of odor. After the first treatment the discharge stopped as usual and the odor was gone. After two or three more treatments the discharge returned the same as before but the odor was less marked.

The following unfavorable results may arise: Pain, eczema of the canal, tinnitus aurium or subjective noises in the head, vertigo during treatment and increased discharge. The pain is not generally felt during the first few treatments but gradually increases as the reaction develops.

By the reaction is meant that the drum and the exposed portion of the middle ear are seen to become red, then to turn to a grayish blue color which may last for two or three treatments, when all the surfaces begin to produce a scale which continues for a few days, clearing off in places and persisting in others. Until this scaling off is complete we can not determine how much tissue is involved, for then the parts not ulcerated clear off, leaving a shiny red surface and the ulcers by this time have a granulating appearance.

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*Read before the Forty-Ninth Annual Meeting of Oregon State Medical Society, Portland, Ore., July 10-11, 1923.

The treatments are regulated as to interval, as well as duration and amount of current by the amount of reaction. At the beginning we think it better to give a treatment every other day, commencing with 3 ma. for ten minutes, but some patients are not able to stand this amount, as in some of the subacute cases. If after two or three treatments there is no reaction, we increase the time to fifteen minutes, but the current is kept within 3 ma. As soon as the reaction begins, we reduce the time and current within the tolerance of the patient, but nearly always a treatment of ten minutes duration is gipen, but the current may pary anywhere between 1/5 and 3 ma.

In some cases an eczema of the canal may develop at the time that the scale is being produced but this has given no trouble, as it soon cleared up under zinc oxide ointment when the H_2O_2 has been omitted from the cleansing process.

Some of these old cases are troubled by tinnitus aurium or subjective noises, which are increased as the reaction is developed and may require some temporary treatment to endure sleep and rest. As the reaction subsides this treatment can be discontinued. Vertigo or dizziness is the physiologic response of a normal labyrinth to the galvanic current and is more active in some than in others, but can be controlled to a great extent by the rapidity with which we turn on the current. From two to four minutes should be consumed in reaching the maximum of 3 ma.

The discharge is stopped in nearly every case, following the first treatment, but begins again a day or two after the second treatment and increases until it is generally worse than it was before the treatment was begun. This causes a great deal of discouragement, alike to the patient and physician until he has learned to expect it.

At this time the sloughing takes place, if there is any, as happened in the tuburculous ear. In all ears the scales begin to appear and increase with the quantity of discharge and likewise the two subside, but the scales disappear first, leaving a smooth shiny red surface where it is healed and a granulating surface over the ulcerated portion which gradually closes in from all sides, healing under a dry scale which when removed leaves a shiny red surface as above described.

Technic. We clean the ear thoroly with dry cotton-tipped probes, being sure to remove all the pus from the walls, thus exposing them to the action of the zinc sulphate solution. When this is done we fill the ear with H_2O_2 and allow it to foam up, then remove it with cotton. Often we find that there is still more pus which has been loosened by the H_2O_2 which can now be removed. Some ears can be politzerized to more thoroly remove the pus from the tube and the tubal region.

After drying all the surfaces with cotton we apply foric alcohol, which we follow by filling the ear with a 1 per cent zinc sulphate solution, in which is placed the positive zinc electrode in the center of the canal. This should be done with care, for without this precaution an ulcer will be produced at the point of contact.

The patient's hand is placed in a container of water, to which is attached the negative pole. We now cautiously turn on the galvanic current, asking the patient to tell us when the first sensations of burning are felt in the ear. At this time we pause for a moment to note the effect.

We have found that the effect of the current is not the same in all cases. In some the sensation will soon die away and require more current to produce the same result. While in others the effect seems cumulative and as the treatment goes on we may have to turn back rather than advance. We hve found it is better to advance very gradually, keeping well within the tolerance of the patient, for in this way we are able to use more current than when this precaution is not taken. When the ear is once started to aching, we can not increase the current but must turn back.

As the sensations during treatment are described differently by different patients, it is hard to give a fast rule. The best description is given by a patient who is a doctor, who has an involvement of the left ear. He states as the current begins, the sagittal canal being the first to respond, he seems to tip forward and as the current is increased the horizontal is the next to be stimulated, causing him to seem to roll to the left. From now on the sensations are not so definite and, instead of turning endwise as should be expected, he seems to wobble from side to side until he comes to rest, when the current is no longer increased. The whole train of sensations are repeated in the inverse order as the current is reversed and continues for some time after the current has been shut off.

Another patient describes it as a slight burning, gradually expanding in all directions and, if caution is not used, this becomes a severe pain, radiating over the whole side of the head and into the jaws and neck. At the height of the reaction this pain persists for hours after treatment, as was experienced by the patient with the tuberculous ear, in which case we were using very heavy dosage in order to produce a reaction.

Still another patient describes the sensation of tickling and does not complain of burning or dizziness. In some the vertigo increases with the number of treatments, while in others the opposite result is obtained.

One of the factors governing the success of this treatment is the size of the perforation. An ear wit ha small perforation, which would prevent the thoro cleansing of the walls and likewise prevent the zinc solution coming in contact with the diseased surfaces, will show little or no improvement from this treatment.

Infected tonsils, adenoids, infected sinuses, mouth infections, carious teeth, etc., which would be quite sure to reinfect the ear, will of course hinder the treatment. If these conditions exist, they should be removed before we can expect much result from this or any other treatment.

SUMMARY

1. These cases give slow and unsatisfactory results with the established routine treatment.
2. The cases best suited for this method of treatment are those giving the least promises of success from the routine treatment, i. e., old chronic cases with large perforations.
3. The technic is very simple and easily applied.
4. The effect of the treatment is very easily controlled with practically no risk to the patient.
5. Generally the patient is not uncomfortable during treatment.
6. The results are quickly obtained, when compared with the established routine treatment.

Selling Bldg.

DISCUSSION

Dr. H. R. Lucas, Portland: We all realize that the common garden variety of chronic discharging ear as usually treated is discouraging alike to patient and physician. Therefore, any new light and help on this subject will come as a gift. As the essayist notes, the principle and application of this treatment are both simple. The method makes use of the well known antiseptic, astringent and tonic action of the zinc salts, the choice of the sulphate being made in consideration of its solubility and mildness of reaction. To these advantages found in its usual application is added the driving influence of galvanism by means of electroylsis. A rather careful search of the literature on this subject seems to indicate that work of this nature up to the present time is being carried on only in Europe. The work of Dr. Fox here is, therefore, of a pioneer nature and worthy of study.

It is true that careful toilet of the parts that is made preliminary to the ionization is of benefit itself. It is also true that the selection of favorable cases is based upon the free accessibility of the diseased points. With this in mind we might think, possibly, that a more painstaking care in the routine treatment of chronic suppurative otitis media by the established methods might yield us more favorable results. Ionization, however, seems to add definitely to our armament in the treatment of chronic otitis media. Especially is this true in those cases, in which we have a relatively poor surgical risk in doing a thoro mechanical elimination by means of some form of mastoidectomy, and in those persons who refuse operation.

I am glad to have the author call attention to the extraneous causes of chronic ear discharge, such as focal infection in teeth, tonsils and paranasal accessory sinuses . These should be eliminated in all cases, whatever the active treatment of ear conditions may be.

My own experience with zinc ionization in chronic otitis media is limited chiefly to observation. The number of cases in which the method has been used is limited. There is at present a high percentage of healthy resolution apparent in the cases in which it has been used, and in all cases recorded the usual methods of treatment in the hands of many men had resulted in failure. The paper is in a manner a preliminary report, and we have not the right to say that we have reached definite conclusions, but the method is suggestive of definite help in selected cases. A fuller report may be expected in the future.

The latest literature on this subject is from investigations at the Ear and Throat Clinic of the Royal Infirmary, Edinburgh, by Stephen Young. He states that "it would seem that of the 50 per cent of cases of middle ear suppuration failing to respond to conservative measures, about half will be cured by efficient ionization, thus leaving about 25 per cent of all cases of chronic middle ear suppuration which will require mastoid operation or some other form of treatment."

Ionization would seem to have its place, therefore, in many cases. Young's estimate of the contraindications for its use is as follows: "(1) Posterior perforation with mastoid involvement, (2) attic perforation with cholesteatoma, (3) organized granulations in the tympanic cavity or mastoid antrum, (4) nasopharyngeal conditions (these must be treated first or reinfection will almost certainly occur), (5) anterior marginal perforations with eustachian tube infection."

It would seem, therefore, that the best results of treatment by ionization may be expected in those cases where the disease is limited to a nongranulating infection of the middle ear itself.

THE STRUCTURE AND FUNCTION OF THE ACOUSTIC LABYRINTH*

THE STRUCTURE AND FUNCTION OF THE END ORGANS OF THE SEMICIRCULAR CANALS AND THE VESTIBULE

CLINICAL PROBLEMS IN HANDLING CASES OF CHRONIC SUPPURATIVE OTITIS MEDIA*

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The first lecture gave an account of the historical development of the ideas regarding sound perception. It was shown that the conclusion that there exists in the labyrinth of the ear a mechanism which fills the role of physical resonator, responding in one part of the cochlea to high pitched tones and in another part to low pitched tones, was arrived at long before there existed any definite idea as to what this physical mechanism consisted of, that is, before there was any knowledge regarding the existence of the membranous labyrinth and even before it was known that the labyrinth was filled with fluid and not with air "implanted," as advanced by Aristotle. With the discovery of Corti's organ it became apparent that the anatomic structure, in which occurred the transformation of physical impulses of sound waves to the nervous impulses leading to sound perception, was a hair cell. Furthermore, it became recognized that the stimulation of the hair cells was dependent upon an irritation applied to the projecting hairs and it has long been accepted that this irritation consists of some interaction between the hairs and the membrana tectoria.

There are only two possible ways by which such an interaction can be brought about, either by the hair cells being carried upwards against the tectorial membrane from the vibration of the basilar membrane or by the movements in the membrana tectoria itself. He discussed in detail the various theories regarding the way in which this physical mechanism, which responds to the impulses of sound waves, was supposed to act and pointed out that very little can be expected in the way of elucidating this subject by studying the reaction in models, since our knowledge regarding this delicate mechanism is not sufficient to enable us to construct a model which bears any palpable resemblance to the actual mechanism itself.

The conclusion which one reaches as to the probable mode of response is determined by that response which would best explain such phenomena as subjective tone analysis, the occurrence of defects in the midst of the tone scale, preservation of islands of hearing in cases of rather extensive disease of the labyrinth, the production of rather circumscribed areas of degeneration of Corti's organ from the overstimulation from particular tones.

The second lecture comprised a demonstration of lantern slides made from microscopic sections of the end organs in the vestibule and semicircular canals. This was followwed by a discussion of the phenomena elicited in the rotation tests. He pointed out that three explanations have been offered to account for these phenomena. The explanation of Breuer was that but a momentary impulse is given to the endolymph, both on starting and stopping rotation. This momentary impulse displaces the cupola and thus produces a stimulation of the hair cells of the crista, which stimulation continues until the cupola has gradually gone back to its normal resting place. The phenomena resulting from the starting and stopping of rotation, therefore, namely, the nystagmus, sensation of being turned, last for a considerable period.

The second explanation is the one offered by Barany. He also accepts the explanation that there is but a momentary impulse given the endolymph on starting and stopping rotation. This momentary impulse, instead of displacing the cupola, sets off the tonus centers, in which there is stored-up energy which requires just so long to become expended. These two hypotheses may be expressed by the following formulae:

Breuer's hypothesis:

The duration of the endolymph < duration of perilymph stimulation = the duration of the phenomena resulting from rotation, nystagmus and sensation of being turned.

Barany's hypothesis:

Duration of endolymph current = duration of peripheral stimulation < duration of the resulting phenomena, that is, duration of resulting nystagmus and sense of being turned.

There is a third hypothesis which we express by the following formula:

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*Abstracts of lectures delivered before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

Duration of the endolymph current = duration of the peripheral stimulation = duration of the phenomena resulting from peripheral stimulation.

It was pointed out that the one hypothesis which accounts in a plausible manner for all of the phenomena is this third one. The difficulty in accepting this hypothesis is in accounting for the duration of the endolymph current resulting from its inertia on starting and stopping rotation. This difficulty has been magnified by assuming that the sole factor to be considered was the size of the membranous semicircular canals. Dr. Shambaugh points out that the inertia both on starting on stopping rotation affects as well the perilymph, not only in the semicircular canal but in a larger measure the much larger cavity of the vestibule, and by pressure upon the membranous labyrinth this inertia of the perilymph is a most important factor in contributing to the duration of the endolymph current.

The speaker then discussed in detail his theory of the origin of labyrinth tonus, that it is due to pulsations in the labyrinth, dependent upon pulsations in the blood supply, an hypothesis which he published first in 1912 and with which Barany has recently expressed himself as agreeing.

Dr. Shambaugh considers the tonus function of the semicircular canals as the most important function of these structures and explained his reasons why the tonus from the right ear stimulates impulses causing movement to the left and vice versa, so that when a patient sustains a sudden destruction of the labyrinth on one side, there develops the tendency to fall towards that side and the eyes are pulled over to that side with the resulting quick motion towards the opposite side.

The third lecture dealt with the clinical problems in connection with chronic, suppurative otitis media. In this he traced the development of our knowledge regarding this not uncommon condition from the earlier views that it was harmful to check a discharging ear. The recognition of the serious complications which develop with chronic, suppurative otitis media brought about the development of the radical mastoid operation.

For a long time the proper indications for this operation were not understood and all cases of chronic, suppurative otitis media, which could not be cured in a reasonable period of time, say three weeks or three months, were believed to constitute cases which should properly be operated on. Our position at the present is quite different. We recognize that certain cases are dangerous and certain are not. The danger in chronic, suppurative otitis media lurks only in those cases where there exists a bone invading process and it is only these where the radical mastoid operation is really indicated.

Clinically, the diagnosis of this condition can usually be made at a single examination. If the process is clearly one which involves only the mucous membrane, the case should be treated only by local measures, even should the discharge never cease entirely. It is only in the cases where there is a bone-invading process, caries or cholesteatoma, that radical surgical interference is required. Sometimes caries is restricted to small areas on the inner wall of the tympanum; sometimes the cholesteatoma has been able, by erosion, to accomplish what we accomplished with a radical mastoid operation, so that there is nothing to be gained by the latter. In other words, not all cases of caries or of cholesteatomma require operation, but practically all cases which require operation are cases in which caries or cholesteatoma are present.

DISTRICT MEETINGS OF AMERICAN COLLEGE OF SURGEONS

The district meeting of the American College of Surgeons for Oregon and Idaho will be held in Portland for the members from these states on Sept. 24-25. Beside the usual program of papers, clinics will be held at the different hosiptals of the city. Special importance is laid on the plan for a public meeting on the evening of the 24th. It is expected to assemble a large audience in a commodious meeting place, when facts will be presented regarding the medical profession and the general public. An effort will be made to disclose the deceptions and frauds which attend the modern cults and the real danger of the propaganda so industriously carried on by them. Beside local speakers, prominent men from the East will be in attendance.

The district meeting for Washington and British Columbia will be held in Victoria Sept. 28-29. A program will be arranged for this meeting along lines similar to that for the Portland meeting.

THE AMERICAN ROENTGEN RAY SOCIETY

The annual meeting of this society will be held in Chicago with headquarters at the Congress Hotel, Sept. 18-21. This will be a very important meeting for all physicians interested in x-ray work. It will particularly stress x-ray therapy and announcements indicate that treatment by high voltage x-ray will have a prominent place on the program. Besides papers from leading men in this line of work from our own country, a number of eminent foreign contributors will appear on the program.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Montana
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 323 Cobb Building, Seattle, Wash.
SEPTEMBER, 1923

EDITORIAL

THE BENZOATE TEST FOR RENAL FUNCTION

Previous to a few years ago the diagnosis of nephritis was based chiefly on the determination of the percentage of albumin and casts in the urine, the severity of the case being judged largely by the abundance of these factors. Nowadays, however, it is necessary to ascertain as far as possible by refined tests the degree of the kidney infection and to discover this condition at as early a stage as possible. For these purposes new tests have been introduced within recent years. Among the latest of these is the benzoate test, presented by Kingsbury* of Minneapolis, on which he has worked the last three or four years.

The principle of the test is based on the fact that, after a certain amount of sodium benzoate is ingested, an average amount can be recovered from the urine in a certain number of hours, appearing as hippuric acid. By experiments conducted mainly on medical students, it was discovered that the normal average total three-hour output is 98 per cent of the amount ingested. The hippuric acid elimination is markedly less in persons suffering from nephritis than in normal individuals. While this test might not be of special value in the ordinary known case of nephritis, it is particularly useful in borderline cases, where its efficacy has been proven in early stages of the disease. The author states that the elimination of less than 70 per cent in a two-hour test and less than 90 per cent in a three-hour test is to be regarded as low. The value of the test lies in showing the degree of impairment of renal function early in glomerulonephritis, nephrosis, pyelonephritis and arteriosclerosis of the kidney. It is also useful in determining the degree of improvement in function, following the acute renal infection of toxemia of pregnancy.

The administration of the test and determination of its results are simple and applicable on the part of any practitioner. In conclusion he states that the benzoate test indicates the impairment of renal function early; that it indicates renal insufficiency earlier than does the test of the urea content of the blood; low results in benzoate tests have been noted in cases showing at the same time normal concentration of urea in the blood, but normal indications in benzoate tests have not been obtained on patients whose blood showed at the same time a retention of urea.

MEDICAL DEFENSE

Every physician appreciates the necessity of life, fire, accident and automobile insurance. If he fails to protect himself against loss along these lines, he is negligent regarding his best interests and of those dependent upon him. At the same time many members of the profession fail to realize the importance of protection against malpractice suits. During an active practice he is liable sometime to be the object of such form of prosecution. Thru no overt act of his own but often as the result of circumstances over which he has no control, the ill will of a disgruntled patient may be excited against him, or an attempt to collect an overdue account may be avenged by the institution of a malpractice suit. If the practitioner engages in surgery, and particularly the treatment of fractures, he is especially liable to an attack of this character. It is said that 50 per cent of alleged malpractice cases result from the treatment of fractures and dislocations.

While commercial indemnity insurance is a reliable form of protection and affords more or less complete protection to the individual, after suit has begun it is unable to correct conditions tending to protection against such suits. Here is where the state medical defense comes in for the benefit of the members of the individual state association. It is not interested in making a profit but is concerned in improving existing conditions among its members and protecting them against unjust attacks. The element of cooperation is powerful among all associations of individuals. Whatever injures one member is detrimental to all. The principle is announced at the outset in the state medical defense that payment of indemnities will not be assumed and will be fought to the limit. Payment of court costs and all legal expenses are cared for. It does not make a stand on technicalities nor the observance of intricate rules and regulations. The existence of such medical defense in a medical society is indirectly a defense for those who are not subscribers or members of the fund.

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*Kingsbury, F. B.: The Benzoate Test for Renal Function, Arch. of Int. Med. 32: 175 (Aug. 15), 1923.

Its greatest benefit is determined by the number of the profession in a given community who are enrolled in its membership. The plan has prevailed in the Washington Association, since the establishment of the defense fund, of having membership depend upon voluntary subscription. At the present time its membership numbers about four hundred and fifty. The Oregon Association has followed the same plan until this year's annual meeting, when a substantial increase of the annual dues was adopted, provision thus being made for all members to come under the medical defense fund. While Washington maintains the voluntary membership, the full protection of these members, as well as reflected protection for nonmembers demands a large addition to its membership roll. If the recent history of the activities of this medical defense were known to the profession of the state, with the protection which it has afforded certain practitioners, the benefits of this defense would be realized to such an extent that no member of the association could afford to continue without applying for membership.

ATTACKS ON ESTABLISHED MEDICINE

When one engages in an argument and finds that he has the weaker side to support, he is apt to indulge in billingsgate and venemous language in order to conceal the weakness of his position, thus employing a smoke screen, so to speak. During recent times similar methods of procedure have been common among those essaying attacks in the domain of medicine. The recently established cults and various forms of fantastic medical systems have been promoted by their supporters thru public assemblies, where the people have been induced to gather and be enlightened as to the good news freely imparted, regarding new and abbreviated methods for the sure cure of chronic and incurable diseases, which it is announced established medicine has either failed to benefit or has been accustomed to treat negligently and unskillfully.

During the past year the high priest of chiropractic roamed over the land, holding series of meetings in different cities, where in a most flippant and casual method of discourse, he proceeded to annihilate the proven facts of medical science, showing that bacteriology was all a humbug, medicine was a total failure in the treatment of diseases, and the simple, wonder-working, basic principles of chiropractic would in a jiffy solve all the ills to which human flesh is heir, to the utter discredit of the fraudulent medical profession. Recently has arrived the magazine editor, filled with Abramesque zeal, publicly vouched for by men educated in regular medicine, whose assemblies reach large numbers of citizens, who proclaims in exaggerated, grandiloquent phraseology the wonders of the phenomenal electronic discovery relating to health and disease. As with others of this class, his medical ammunition consists largely of volleys fired at the doctors. Not being versed in the principles of medicine himself, he is not required to follow lines of medical argument, but is free to indulge in all sorts of romances and imaginations, which he serves up to his audiences as facts. Following true to form, he devotes much of his time to villifications of the doctors, presenting their inhuman and brutal treatment of the poor patients who chance to be their victims, not forgetting to mention the inhumanities of vaccination and vivisection. Most of the failures of the doctors to cure their chronics and incurables of recent time could have been avoided, if they had accepted the epoch-making discovery of Abrams, the medical wizzard of the present day. Among other methods of attacking the profession is the use which it is proposed to make of the moving pictures, as presented in the film, "Human Wreckage," in which the responsibility of drug addiction is placed on the shoulders of the medical profession. It is useless to describe the details of this story, except to state that the above is the idea which it features. So far as its appearance in Washington is concerned, the Public Health League has taken steps to prevent its presentation on account of its falsity and untrue argument.

Lincoln's truism still holds that you cannot fool all the people all the time. If these advocates of new things in the domain of the healing art were to function with more moderation and less venom, people accustomed to exercise their grey matter might listen with some degree of credence. Many people, who never think and are alert for novelties, swallow bait, line and sinker at the first nibble, even tho subsequent medical indigestion may result. The followers of rational medicine have little cause to be perturbed over these onslaughts. Historical facts prove the brevity of life for all such medical fads and fancies. They have been frequent and numerous in past years but who can designate a single one that has survived the publicity of time and experience. They come and go, while the science of medicine has steadily advanced from the time of Hippocrates, accumulating new facts and principles, abandoning those proven futile, but having as a goal the acceptance only of such medical discoveries as are capable of withstanding the rigid tests of scientific investigation, and ignoring such as exploit the unsupported zeal of some enthusiast's undeveloped theories. These relations between the true and the false will continue in the future as the past. While the latter may cause temporary annoyance, their ultimate fate may be considered assured.

DISTRICT MEDICAL ASSOCIATIONS

The profession of the Pacific Northwest is alive to the benefits to be derived from a medical association comprising the states of this district in consequence of the recent meeting of the Pacific Northwest Medical Association. Most physicians in this section, however, are probably not aware of similar organizations in other parts of the country. The program has been received of the Tri-State District Medical Association, comprising the states of Iowa, Illinois, Wisconsin and Minnesota. This association will hold a meeting at Des Moines, Ia., Oct. 29-Nov. 1, which members of the associations represented by this journal are invited to attend and to take part in the program. This is purely a postgraduate organization and the entire time of the annual meeting is devoted to scientific study. The program includes the names of thirty-five of the best known members of the profession thruout the East and Middle West. If one is so situated as to be able to attend this meeting it will be well worth while.

WASHINGTON ASSOCIATION MEETING

The annual meeting of Washington State Medical Association will be held at Spokane, Sept. 20-22. Sufficient time will have elapsed since the many medical meetings of early summer for abundant recuperation, so that the members of the association will be ready for this family gathering of the Washington profession. A glance at the program below will indicate the correctness of this designation, since papers listed are almost entirely from its membership. In addition to the reading of papers and discussions, the Public Health League will hold its annual meeting and elect officers for the ensuing year. Other matters of interest to the profession of the state will be considered. The annual meeting is rarely scheduled for the harvest season. This offers a novelty that will add to the interest of this occasion. It is hoped this will be a well attended and satisfactory meeting, as was that of last year.

PROGRAM

THURSDAY, SEPTEMBER 20

10:30 A. M.—House of Delegates.
Business Session. Reports of Officers and Committees.
1:30 P. M.—Joint Session of Contact Committee with House of Delegates.

FRIDAY, SEPTEMBER 21

General Session

9:00 A. M.—"Responsibility of the Carrier for Acute Infections." Dr. S. H. Johnson, Bellingham.
"Experience with Insulin." Dr. Lester J. Palmer, Seattle.
"The Pupil in Health and Disease." Dr. C. L. Hoeffler, Everett.
1:30 P. M.—"Morbidity in Maternity." Dr. H. H. Skinner, Yakima.
"Rest in the Home Treatment of Pulmonary Tuberculosis." Dr. W. B. Penny, Tacoma.

Public Health League of Washington

Report of Dr. H. J. Whitacre, Tacoma, President, and Mr. Robert O. Jones, Seattle, Executive Secretary.
Election of Officers and new business.
7:00 P. M.—Annual Banquet at the Davenport Hotel.

SATURDAY, SEPTEMBER 22

9:00 A. M.—House of Delegates.
Election of Officers.

General Session

10:00 A. M.—"Correction of Saddle Nose by Implantation of Elephant Ivory." Dr. Arthur Burns, Seattle.
"Fibrocystic Tumors and Diseases of Bones." Lantern Slides. Dr. Roger Anderson, Seattle.
"Compensation Neurosis." Dr. Geo. Price, Spokane.
1:30 P. M.—"Thymus Gland Enlargement in Infants." Dr. E. J. Barnett, Spokane.
"Goiter." Dr. Thomas M. Joyce, Portland.
"Gallbladder Complications." Dr. J. Reid Morrison, Bellingham.

CHILD HEALTH SCHOLARSHIPS

The American Child Health Association announces that $10,000 is available to physicians who desire to pursue training in the furthering of child health. It is proposed to give to a selected number of child specialists the privilege of visiting health demonstrations and health centers, where outstanding forms of child health work will be studied. Dr. Borden Veeder is chairman of the Special Committee on Physicians Scholarships, with offices at 370 Seventh Ave., New York City. Details concerning this spceial work can be secured from him.

A NEW MEDICAL MAGAZINE

For some time in the past the United States Public Health Service, at Washington, has furnished monthly mimeographed abstracts to health officers, physicians, nurses and social workers of articles dealing with venereal diseases that have been published in domestic and foreign current journals. These have met with such favor and popularity that the Public Health Service was impressed with the desirability of presenting the information in more readable form. Consequently a regular monthly, printed publication has been launched, entitled *Venereal Disease Information,* which will appeal to all interested in treatment of venereal diseases. The subscription price is 50c per year, payable to the Superintendent of Documents, Government Printing Office, Washington, D. C.

MEDICAL NOTES

OREGON

Doctors Licensed. The semiannual examination before the state board of examiners was held in Portland last month. Of 28 applicants, 22 were successful and granted licenses to practice in Oregon. They were as follows: R. S. McVicker, M. M. Woodworth, Edith V. Witzel, Ira A. Manville, J. V. Springer, Roger Holcomb, J. L. Holzman, W. J. Slater, C. W. Emmons, J. A. Wunderlich, C. P. Pynn, L. C. Jensen, M. L. Margason, J. D. Leonard, L. S. Lucas, A. C. Osterholm, D. J. Butts, D. B. Seabrook, Toyoki Tanamachi, R. C. Hough, A. J. Bowles, G. S. Morgan, J. V. Springer.

Eastern Oregon District Medical Society held its annual meeting at Wallowa Lake. It consisted of a two day meeting including papers and a clinic. Amusements consisted of dancing, swiming, etc. The following papers were presented. Some Mothers and the Family Physician, Dr. Estella Warner, Portland; Treatment and Handling of Diabetic Patients, Dr. Blair Holcomb, Portland; Tick Bites, Dr. F. D. Strickler, Portland; Treatment of Goiter, Dr. A. C. Smith, Portland; Care of the Criminal Insane, Dr. W. T. Williamson, Portland; Chronic Nontuberculous Bronchitis in Association with Infection of the Accessory Sinuses of the Nose, Dr. F. B. Kistner, Portland; Some Commonly Neglected Features in Intestinal Surgery, Dr. R. B. Dillehunt, Portland; Diverticulitis, Dr. C. W. Sharples, Seattle. Dr. F. E. Boyden, Pendleton, was elected president for the coming year. The next annual meeting will be held in Pendleton.

Sale of The Cedars. The Cedars was last month officially sold to Multnomah County by the City of Portland for one dollar. The thirty-two acres and buildings are considered worth $110,000. If The Cedars ever ceases to function as a public institution it will revert to the city.

Ethelyne Gas Barred. The Fire Marshal of Portland has prohibited the use of ethelyne, the new anesthetic gas. It is forbidden to be used or kept in the city on account of being highly inflammable and liable to explosion by slight changes in temperature or static electricity.

Physician Honored. Dr. Ralph C. Matson, of Portland, has been appointed representative of the English speaking nations on the executive committee of the International Artificial Pneumothorax Association. The executive committee consists of only four members, representing all French, German, Italian and English languages.

Sues for Tonsils. Last month a patient in Portland was reported to have started suit against a physician for $10,000 damages for the removal of two tonsils without her consent. She stated she was given an anesthetic for an operation on the nose and not for the removal of tonsils.

Changes Location. Dr. R. A. Jayne, mayor of Philomath for the past two years, has moved for practice to Amity. He lived in the former city for six years, during which time he was city physician.

Dr. J. R. Coffey, of Portland, a recent graduate of the Oregon Medical School, has gone to Baltimore, where he will act as interne in St. Agnes Hospital.

Changes to Another Hospital. Dr. W. W. Abbott, government physician at Klamath Agency, at Klamath Falls, has moved to Minnesota, where he will have charge of a government hospital.

Resigns Office. Dr. R. R. Ross, of the medical staff of the State Hospital at Salem, has resigned and begun general practice in that city.

Dr. W. P. McAdory, of Birmingham, Ala., has located for practice at La Grande.

Dr. George Olcutt, of Antiock, Ill., has retired from practice, but located for his future home at Baker.

Dr. Henry Garnjobst, of Brownsville, has moved to Corvallis, where he has located for practice.

WASHINGTON

New Hospital at Centralia. The Washington Cancer Institute, on the Pacific Highway, which was built about a year ago at a cost of about $50,000, has ceased to function for its original purpose. It has been taken over by a number of Centralia and Chehalis physicians to be maintained as a general hospital, and will be known hereafter as The Centralia General Hospital.

New Hospital Opened. On August 11 a new hospital was opened at Potlatch. A large boarding house was remodeled for hospital purposes, making an institution with thirteen private rooms and four wards of two beds each.

New Appointee to Sanatorium. Dr. H. L. Hill, of Walla Walla, has been appointed in charge of Oakhurst Tuberculosis Sanatorium at Elma, to succeed Dr. R. J. Carey, who has located for private practice at Long Beach, Calif.

New Hospital Opened. A new hospital has been opened for the receipt of patients at Omak. It is 28 x 70 feet, and is provided with private rooms, surgery and other appliances of an up-to-date hospital.

Hospital Opened. Last month the Columbia Valley Hospital, at Pateros, was reopened for patients. It has been thoroly overhauled and refurnished.

Missionary to China. Dr. Douglas Corpron, of Yakima, sailed this month for China, where he will join the Nanking medical staff under the Central China Missionary Board. He will devote a year to the study of the Chinese language before being assigned.

Full Time Health Officer. There has been a long discussion at Walla Walla regarding the appointment of a full time health officer. The question of the cost seems to be a determining factor, as to whether the new plan of a full time man will be a greater expense than their custom of past years. A committee was finally appointed, representing the city commissioners who were to confer with the county commissioners regarding the desirability of a full time man for the city and county health officer. Decision was postponed until October.

Appointed Marine Surgeon. Dr. J. B. Kinne, of Aberdeen, has been appointed marine surgeon of the Port of Grays Harbor, to succeed Dr. R. F. Hunter, resigned. The marine ward for the port is located at the Hoquiam General Hospital.

President of Pioneers Dr. W. C. Cox, of Everett, has been elected president of the Everett Pioneer Association. He is one of the old residents of the city.

Injured by Railway Train. Last month Dr. W. S. Frost, of Spokane, suffered a broken pelvis when his auto was struck by a train while crossing the Spokane and Eastern Railway.

Dr. H. S. Holmes, formerly of Richey, Mont., has located for practice at Spokane.

Dr. C. L. Hawk, who has been connected for some time with the Northern State Hospital at Sedro-Wooley, has moved to Kennicott, Alaska, where he will have charge of the hospital.

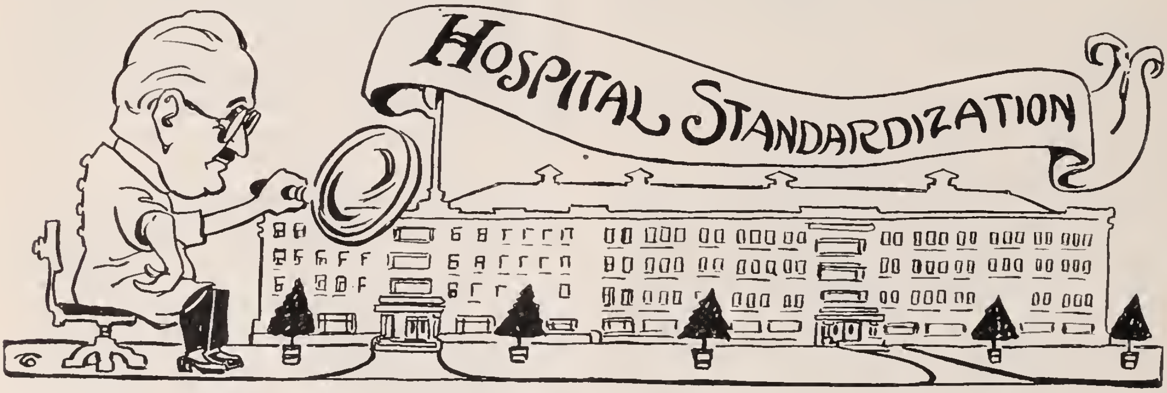
Dr. R. G. Andres, who practiced in Cheney for ten years, has returned to Spokane for practice after spending five years with the Mayo Clinic at Rochester, Minn.

IDAHO

Addition to Hospital. The Gritman Hospital, at Moscow, has been enlarged by the erection of a brick addition which will add materially to its efficiency.

Hospital Opened for Patients. The Boyd Hospital, at Twin Falls, has been reopened for the reception of patients. It was sold two and a half years ago when Dr. Boyd opened a hospital at Long Beach, Calif. The latter having been sold, the doctor returned to Twin Falls to resume practice.

Dr. C. K. Henkle, formerly of Great Falls, Mont., has located for practice at Coeur d'Alene.



Edited by GEORGE W. SWIFT, M. D.

RATING OF STANDARDIZED HOSPITALS

Dr. Williamson, representative of the American College of Surgeons, has completed the annual inspection of hospitals for the College on the Pacific Coast. for the first time a representative from the College has not been hurried in his inspection and consequently his report will be eagerly awaited by all who are interested in this movement.

While the standards set up by the American College of Surgeons are high and the inspections are made with the idea of helping the individual hospitals, the publication of the ratings of the College always causes more or less disturbance. A hospital that is given a Class A rating has a tendency to become self-satisfied and not continue its improvement, while one that is given an asterisk has a tendency to make a sincere effort to remove this, and the hospital that is not mentioned feels hat an injustice has been done. As a matter of fact, practically no hospital in the country could be given a 100 per cent rating on the minimum standard. It would be far better to arrange a point system and give them ratings of a number of points of a possible perfect score. In this way each hospital would be constantly on the look-out for improvement in all branches.

After all, the important function of a hospital is to cure the sick. The building does not enter greatly into the question of curing the patient; the administration and equipment do have a greater value; the laboratory, perhaps, comes next to administration and, finally, the medical personnel and nursing care. The later are, in reality, the great factors in a hospital. It is for this reason that the previous article on tuberculosis sanatoria (see the July issue) was published. It calls attention to a new type of rating.

If the hospitals of Washington were rated regarding the medical personnel, some of the smaller hospitals would stand far ahead of the larger and better equipped institutions because there is a closer personal contact between the men in the smaller ones. Furthermore, where but a few physicians attend a hospital, the tendency is for a greater interchange of ideas than where the individual is lost in a big organization and there is less opportunity for cooperation. On the other hand, the larger institutions offer the individual a greater opportunity to develop his skill. The equipment and method of diagnosis in the laboratory, the presence of a trained dietitian, more nursing help and many other factors go toward offering the greater opportunity in the larger institutions. The larger ones should carry on the research work, which is likewise an additional adjunct in the treatment of disease.

The minimum standard as laid down by the College of Surgeons is at best only a makeshift, tho to be sure a very imoprtant contribution to the hospital development movement. It is not based upon sound reasoning, however. The fallacy is easily seen. When any hospital has a complete equipment as required, a staff organization, complete case records and clinical meetings, it is standardized. The spirit of standardization may be present also, but you cannot bring back a person who is dead, no matter how many doctors discuss the pros and cons; you cannot say that this man shall or shall not do surgery or this one medicine, when the state law gives them the right to do these very things.

It brings us to the point of cooperation by all members of our profession and not coercion of the majority by a few. Until the majority of the physicians in any hospital desire to do exceptional work, that hospital, tho it may be listed as a standardized institution, will not be doing high class work and whenever the majority of the medical personnel do desire the very best in everything, then, no matter whether the hospital is listed as standardized or not, it will be so in the highest sense of the word. So it might be well to give these two classifications of standardization serious consideration—the one based upon a point rating from the standpoint, primarily, of the medical personnel, the other a standardized hospital based upon the physical equipment and conforming to a set of standard rules.

THE CURSE OF STATE MEDICINE

At the meeting of the Washington State Medical Association in Spokane, in all probability the Department of Labor and Industries, thru its Medical Director, will ask the approval of the House of Delegates for a new fee schedule for the physicians of the state. Unless there is a marked change in the attitude of the Department regarding the medical and hospital service than was shown in its resolution toward the hospitals on the 3rd of July, 1923, the physicians of the state will have another opportunity to observe what might happen under State Medicine.

Since this problem is of vital interest to the hospitals, it might be well to review briefly the facts in the case. Every physician handling state cases knows that the hospitals have been carrying these cases for the past two years, at least, at a great loss. To care for a charity patient in the City Hospital, County Hospital or Firland Sanatorium, for instance, where no taxes are paid and everything purchased at the lowest possible rates, the average cost is over $3.00 per day. This does not include private rooms and in most instances the wards house from sixteen to twenty patients; the nursing force is at a minimum; there are no frills in any sense of the word. Compare this with what the state asks the hospitals to give in the way of service for $18.00 per week in the ward and $25.00 for private rooms.

The authorities of the hospitals got together and requested a revision of this fee schedule. A great deal of time was spent in an effort to show clearly to the Board the importance of an increase in fees. After due consideration the Board submits a resolution, in which a new schedule is promulgated which does not change in one iota the past fees, but does add a demand for routine laboratory work, including urinalysis, white count and Wassermann, at $3.00. This, of course, is another below-cost demand on the part of the state. They do agree to pay for casts at the rate of $5.00 for arms and legs and $10.00 for body or pelvis, also, to pay for nitrous oxide at the rate of $3.00 per hour. Of the three additional provisions for fees, one, the laboratory, is another loss to the hospital; with the second, casts, the hospital will just about break even, if they skimp on the materials; on the third they will again lose money. This is the answer of the present political regime to an honest, sincere effort on the part of the hospitals to have a fair deal. The probabilities are that the Department will also treat the physicians in the same manner, but that, of course, remains to be seen.

Is it not time for the medical profession to approach the other party interested in this matter, namely, labor, and support such candidates for state offices who will at least give us a fair deal. Perhaps it would be going too far to ask the rank and file to vote for the Farmer-Labor ticket, but certainly we can ask them not to support the present political machine. Only by having the Industrial Insurance Service wiped clean of the present Board can the medical profession expect anything like a square deal and, when they do not receive a square deal, it is needless to say the poor laboring man is not going to get very much in the way of a square deal. It does seem too bad that our state puts this handicap on labor.

There is no use in any of us expecting the hospitals to actually lose money on Industrial Insurance cases. If your patient does not receive the proper treatment; if they skimp on the amount of drugs; if they skimp on the amount of plaster for your casts; if they skimp a little on the food, and if they put four or five patients in a room, where one or two should be, don't blame the hospital, they are only trying to make ends meet. Bear this in mind whenever you have a state case.

If they transfer your case from one hospital to another, don't blame the hospital; remember that they reserve the right under State Medicine to do as they please both as regards the hospital and the doctor. Paragraph 1 of the above mentioned resolution reads as follows:

> "All hospitals handling industrial cases shall file with the department a statement of their willingness to accept the fee schedule and abide by the rules and regulations of the department. No case shall be referred to a hospital which has not filed such a statement and any case which has been hospitalized in any other hospital shall be transferred by order of the department to a hospital which has filed such an acceptance, as soon as the condition of the injured workman permits his safe removal, the first hospital being paid on the basis of the fee schedule only."

A patient who has a little money and wishes to have a few of the frills that go with the hospitals is prohibited by this resolution from obtaining the same. Paragraph 2 states:

> "No hospital shall charge any injured workman any fee in addition to the amount paid by the medical aid fund, except in cases where special services are furnished to the workman at his request with the approval of the department. Any such charge shall be invalid and the department shall be authorized to deduct the amount thereof from the fee payable to such hospital in the case in which the charge is made or in any other case and to return it to the injured workman."

In addition to the above, lest some hospital should be tempted to pad its accounts, the following provision is made to protect the great state of Washington. Paragraph 3 reads:

> "Before any hospital bill shall be paid the hospital shall make certificate upon the bill that no charges of any nature whatsoever, except as above provided, have been directly or indirectly charged to or paid by the injured workman or anyone in his behalf."

The saddest part of this whole controversy is the fact that practically all of the hospitals were foolish enough to sign on the dotted line. Someone gave them poor advice.

BOOK REVIEWS

Edited by KENELM WINSLOW, M. D.

How We Resist Disease. An Introduction to Immunity. (Lippincott's Nursing Manuals.) Jean Broadhurst, Ph.D., Assistant Professor of Biology, Teachers College, Columbia University. 4 Color Plates. Price $2.50. J. B. Lippincott Co. Philadelphia and London. 1923.

The summary of contents in this book embraces the following: Bacteria and their effect upon the human body, active immunity, passive immunity, toxins and antitoxins, agglutinins and precipitins, opsonins, white corpuscles, lysins, vaccines, anaphylaxis, glossary, list of infections and casual organisms, advanced references on immunity, index. The work is written for college students and nurses and is a most difficult and yet successful attempt to elucidate such complicated matters as immunity and the various practical tests based on it, and especially the action of lysins, as in the complement fixation test. The description of the Wassermann reaction is masterly in its simplicity and clearness, and the whole book will prove of great value to the physician who received his training prior to the days when the subject of immunity was known.

The matter of anaphylaxis and protein sensitization is likewise discussed in a simple but wholly satisfactory and scientific manner, and the author deserves great credit in being able to present some of the most complicated subjects in modern medicine so that he who runs may read—and understand. It is really the highest gift of pedagogy. The explanations are made comprehensible by the numerous illustrations which present to the eye in diagrammatic form the theoretic combinations which occur in the process of immunity, and in the tests derived from this knowledge. The work is highly commended in respect to its inception and subsequent development.

It is very easy to review a monograph on a single medical subject but in an encyclopedic work of this kind by over one hundred writers on the most diverse topics, a comprehensive notice of the work is manifestly impossible. The few subjects noted above may serve to call attention to the appearance of this very valuable and unique annual contribution to the advances in medicine and surgery which is equalled by no other single fount of medical learning in this country.

WINSLOW

Digestive Disturbances in Infants and Children. Roentgenologically Considered. By Charles Gilmore Kerley, M.D. and Leon Theodore Le Wald, M.D. Annals of Roentgenology. A Series of Monographic Atlases. Edited by James T. Case, M.D., Ex-President of The American Roentgen Ray Society. Volume III. 81 pp. 54 Plates. $15.00. Paul B. Hoeber. New York. 1923.

This volume maintains the high standard of this series, as might be expected from the standing of the authors. The eighty-one pages of text, giving a full description of technic and the diseases or abnormalities under discussion, are accompanied by forty-nine illustrations, mostly reproductions of x-ray plates with some diagrams. The text thruout is clear and comprehensive, tho not too detailed.

The remainder of the work consists of a series of fifty-four excellent plates, reproductions of actual roentgenograms illustrative of the whole range of the subject. An interesting feature thruout the book in connection with the figures and plates is the explanation in English, French and Spanish. The work is thus rendered of equal value in Spanish American and North American countries. The work is essentially one for the library of the roentgenologist or the internist doing roentgenologic work, and will fill an important place in any such library.

BOURNS

THE PORTLAND MEDICAL HOSPITAL
PORTLAND, OREGON

A private medical hospital, especially equipped for gastro-intestinal, metabolic and cardiovascular diseases

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1922 Collected Papers of the Mayo Clinic, Rochester, Minn. Octavo of 1394 pages, 488 illustrations. Philadelphia and London. W. B. Saunders Company, 1923. Cloth, $13.00 net.

The growth of this yearly volume is phenomenal to those who remember it in its infancy and youth. Beginning chiefly with matter of the most practical kind, it has come to include much valuable research work. Dr. W. J. Mayo, in his paper on handling of chronic peptic ulcers, brings out many useful points. He notes the difficulty of medical treatment of ulcer in the poor and finds few who can afford to make a "pet" of their ulcer. This is precisely what the affluent often do to the extent of becoming "hipped." A patient is recalled treated intermittently now for over a year at a popular clinic who, by alterating with various trips on sea and land, thinks his ulcer may be cured before many more months by proper care of himself.

In the article by Dr. C. H. Mayo on cancer, he points out that the prognosis of cancer can often be only made by the pathologist from frozen sections. Where there is evidence of fibrosis, as shown by lypmhatic infiltration and round cell activity, the resistance to the spread of the disease is marked and the result of operation is likely to be favorable. Whereas, in these instances where there is no such evidence of fibrosis but active cellular growth with proliferation, the outcome is apt to prove fatal, especially when operation is not done before lymphatic involvement.

WINSLOW

Urgent Surgery. By Felix Lejars, Professeur Agrégé a la Faculte de Medecine de Paris; Chirurgien de L'hospital Saint-Antoine; Membre de la Societe de Chirurgie. Translated from the eighth French Edition by William S. Dickie, F.R.C.S. and Ernest Ward, M.A., M.D., F.R.C.S. Cloth. Price $16.00, pp. 808, with 20 full page Plates and 1086 Illustrations. New York, Wm. Wood & Co. 1923.

Too well known to call for extended comment, this latest translation of the Eighth French Edition can be considered to more than live up to the reputation established by its predecessors. Advances in the field of so called urgent surgery are now incorporated in the text and the complete descriptions with appropriate illustrations conform to the general character of the book. The work is noted for its completeness, making references elsewhere unnecessary.

FORBES

Excursions into Surgical Subjects. By John B. Deaver, M. D., Emeritus Professor of Surgery, University of Pennsylvania, etc. and Stanley P. Rieman, M. D., Assistant Professor of Experimental Pathology, University of Pennsylvania, etc. Octavo volume of 188 pages and 30 illustrations. Philadelphia and London. W. B. Saunders Company, 1923. Cloth, $4.50 net.

The first five "excursions" represent the five lectures delivered by Dr. Deaver, in Seattle, in the summer of 1922, in the Extension Course, University of Washington. Many physicians who attended this course expressed the wish that these lectures might be published for future reading and study. Here they are. They present delightful reading, with an abundance of useful substance. They cover the subjects of peptic ulcer, jaundice, disease of the bile passages, trials and joys of a physician and surgical conditions of the intestinal tract. The remainng three essays, by Rieman, on Pasteur, medical education and living pathology, represent addresses made before medical organizations. Each of the excursions of this volume is on a live topic and well worth reading.

SMITH

The Medical Clinics of North America (Issued serially, one number every other month). Volume VI, Number 6, May, 1923. By San Francisco Internists. Octavo of 296 pages with 66 illustrations and complete index to Volume VI. Per clinic year (July 1923 to May 1924). Paper $12.00 net; Cloth $16.00 net. Philadelphia and London. W. B. Saunders Company.

This number features papers on many important subjects by leading physicians of San Francisco. Diagnosis of gallstones, treatment of pyloric stenosis, diagnosis of botulism, dyspituitarism and epilepsy are discussed in different papers. Various aspects of disease of the heart are presented. Several papers deal with phases of malignant disease. It is a volume of interest and profit.

The Medical Clinics of North America. (Vol. VII, Number 1, July, 1923). Mayo Clinic Number.

This number contains papers on many interesing and important topics. Insulin is considered at length in papers by Wilder, Adams, Barborka, Boothby and Wilder. They treat production of insulin, its application to diabetic patients, its effect on the rate of fat producton and kindred subjects. The latest information on this much discussed remedy is here presented. There is a lengthy paper on the heart in exophthalmic goiter and adenoma by Willius, Boothby and Wilson. Among other subjects presented are chronic colitis, chronic Addison's disease, hemorrhagie purpura, as well as diseases which come under the average practitioner. Much available information can be obtained by reading this volume.

A Reference Handbook of the Medical Sciences, embracing the entire range of Scientific and Practical Medicine and Allied Sciences, by various writers. Fourth edition. Edited by Thomas Lathrop Stedman, A.M., M.D. Complete in Eight Volumes. $10.00 per volume. New York, William Wood and Company. 1923.

These volumes comprise the greatest collection of medical information that is published. It is in reality a great encyclopedia of the medical sciences. It includes nearly four thousand articles written by 445 American and Canadian contributors. It contains over 5000 illustrations. This fourth edition has been thoroly revised, largely from experiences of the great war. The bulk of this new material has been placed in the eighth volume. Materia medica articles have been revised to conform with the recent additions to the U. S. Pharmacopoeia and the National Formulary. Many articles have been gone over and extensively revised in order that the description of important diseases may comply with recent scientific investigations. Any member of the profession who has not access to a good working library will find in this system the latest information in all branches of medicine.

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ORIGINAL CONTRIBUTIONS

THE RELATION OF NEUROPSYCHIATRIC STATES TO EARLY STATUS THYMICOLYMPHATICUS*

Walter Timme, M.D.
NEW YORK CITY

Medical literature for many years had produced a variety of glimpses into status thymicolymphaticus, from the viewpoint of the pediatrist, or the internist or some other specialist who had become interested in the condition because of its bearing in his particular field. Warnings were always uttered as to the importance of its recognition, for always did its presence modify symtomatology, treatment and prognosis. In no field has this been of greater importance than in neuropsychiatry, but oddly enough the recognition of this condition in neuropsychiatric states has never until quite recently been emphasized. And never has any real attempt been made to trace the progress of status thymicolymphaticus thru the developmental years to adult life and to mark its metamorphosed characteristics and the attempt of the individual to compensate for its disturbances. In the past ten years it has been my fortune to examine many hundred cases of status thymicolymphaticus in all stages of development, including adult cases, in whom the early history gave indubitable evidence of such disturbance; and as a result of a more or less comprehensive study of these cases, certain general conclusions have been drawn which I shall attempt to present, together with the facts upon which they are based. Following this I shall attempt to show that the basis of the psychoneurotic syndromes is built largely on this foundation.

Reviewing the general symtomatology of status thymicolymphaticus as a basis from which we shall proceed, I give hurriedly the outstanding features of this condition.

Skeleton. Growth of skeleton is usually abnormal in that the various units are in disproportion—thorax too long for legs, and vice versa; hands and feet too long for arms and legs; bony structure usually frail and rachitic evidences are frequently present. A maxillary torus is in evidence.

Teeth. Almost invariably there is delay in permanent dentition with prominence in size of the central incisors of the upper jaw, with comparatively small lateral incisors, and canines that have lost or rather not acquired the fang-like shape, but resemble the incisors in that they have a cutting edge; furthermore, they have not become pigmented as normal canines do. The molars appear very late.

Joints. The tendons about the joints are loose and hence dislocations and subluxations are frequent, together with ability to produce marked contortions of the body. The extremities are like flails and the whole skeleton is of a loosely put together character. The apparently fixed joints, such as the sacroiliac, become partially movable and hence are the seat of intense pain, in this instance backache after long exercise. Like conditions obtain in joints of the foot, and pes planus is the result.

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* Read before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

Skin. The skin is soft and velvety, covered with lanugo, frequently with a marked blush on the cheeks—a typical peaches and cream complexion. The bluish vessels are easily seen thru the translucent skin.

Hair. While lanugo covers the parts which would later be provided with secondary hairy growth, yet such later growth is very late in appearance. Axillary hair and pubic hair do not come in until long after the usual time for the arrival of puberty, and in the boy beard and mustache are still later, and then very sparse. The growth on the head is, however, profuse, soft and silky.

Genital system. In the boy there is usually retardation in growth of the genitals, and not only this but the growth is of undifferentiated character, so that there is a fold of the scrotum which partially or even entirely surrounds the base of the penis, resembling the labia in the female. Occasionally one or both testicles are undescended and there may be hypospadias. In the girl the clitoris is usually disproportionately large, the menses come on late, and are delayed and irregular.

Eyes. The pupils are usually large and mobile, the sclera clear bluish white, and the vessels of the fundus are extremely thin in calibre, engorgement of the veins, however, occasionally being present.

Endocrine glands. The thyroid shows no abnormalities in size, altho it is usually underfunctionating; the thymus gland is present and large, even after the twelfth year. Percussion and roentgenography will confirm this. The picture should be made at the end of a long expiration. The adrenals are invariably deficient, both as to size and chromaffin content. Indeed, the chromaffin tissues thruout the body are deficient. The pituitary gland is usually small and is encased in a sella turcica which is small and enclosed by the clinoids. This fact is of great importance. The gonads are usually small and delayed in development and in differentiation.

Vasomotor system. The blood vessels are of small calibre thruout the body, especially the aorta and the coronary arteries. The heart is small and usually of the drop-heart or tubular variety.

Viscera. Frequently a tendency to splanchnoptosis. Incontinence of urine, enuresis.

Laboratory findings. Blood: Red blood cells and hemoglobin usually normal; white cells show a marked relative lymphocytosis with a low polymorphonuclear count, which at times is as low as five per cent. Usually an eosinophilia is present. Blood sugar is usually low, 0.08 to 0.060 per cent. Of importance is the carbon dioxide tension of the blood plasma, which is invariably low, from forty-five to fifty volumes per cent. The coagulation time is prolonged, often as long as fifteen to twenty minutes. The urine has a low specific gravity, and not infrequently shows the presence of acetone.

General observations. From the foregoing the symptoms exhibited by the patients are readily understood. These are fatigue and dyspnea on exertion; fainting attacks and collapse in critical situations; syncope and death in narcosis, fright and exhaustive demands. The ptosed viscera frequently give signs of ulcer and other gastrointestinal conditions. The symptoms depend upon the low chromaffin supply, the small blood vessels, the low blood sugar and the tendency to acidosis. Death is not usually due, as has been thought, to pressure on the trachea by the thymus, or at any rate only in the rarest cases, but is due to adrenal exhaustion and hemorrhage from the thin vessels into the adrenals or the ventricles of the brain. Urticaria, asthma, acidosis, enuresis, hay fever, circumscribed edema, arthritides and vasomotor spasms, involving the cerebral as well as the peripheral vessels, are all concomitants. Blood pressures are low, pulse pressure frequently down to ten or fifteen mm. The low adrenal efficiency or low arterial tone gives a Sergent's line on stroking the skin of the abdomen.

From the general description, no matter what your field of work may be, you will all recognize cases that have come under your notice. These patients do not all die in growth or adolescence, nor do even a large number of them. What becomes of the survivors? How do they manage to maintain themselves in the struggle for existence? Do they constantly remain a prey to their deficiencies? These questions possibly can now be answered. The development and evolution out of status by the individual's intrinsic powers of compensation and adaptability form one of the most interesting chapters in modern medicine and their recognition will enormously aid us in our power to help hitherto obscure and apparently adventitious symptoms in our patient's progress, no matter what his ailment, no matter what our specialty. But especially significant is the relationship that the symptomatology built about the neuropsychiatric state will be shown to bear to the biochemic and physiologic make-up of our status cases.

You may remember that the salient points in the psychoneuroses that constantly intrude themselves are fatigue, headache, vasomotor imbalance, gastrointestinal disturbances, a feeling of inadequacy and inferiority, depression, and finally, no help forthcoming, retreat to chronic invalidism and hospitalization. This composite array, long the bug-bear of the practitioner of medicine, has been attacked usually on the basis of it being an imaginative subjective affair, highly colored and exaggerated by the patient; and, constantly changing in its locus of activity from one part of the body to a seemingly unrelated other part, without apparent adequate cause, it was relegated to the group of extramedical curiosities and became the source of inspiration, theorization and income of the chiropractic, the osteopath and the christian science healer. If you will go over these various symptoms with me, you will see that practically all of them may have a very good foundation in fact, if the invalid happens to be one of those that answer the general description of the hypoplastic state.

Fatigue. Hypoplastic states, with their low blood sugar content, their small heart and blood vessels in a usually tall stature, their low chromaffin tissue supply, with usually low pulse pressures, must inevitably succumb to overactivity, or even to a moderate activity such as a normal mechanism might readily support. For the muscular mechanism requires not only blood sugar for its activity, but also an adequate conducting pump and apparatus to supply it rapidly. Both of these are inadequate, as well as the mobilizing factor, adrenalin.

Headache. Hypoplastic states are automatically compensated by factors which make for higher pressure, increased blood sugar and smooth muscle tone. Among these principally I believe will be found the secretion of the pituitary body. Overactivity of this gland has been shown to be a prominent feature of such compensation. When, however, as has already been stated, the sella turcica, thru its smallness, cannot accommodate a hyperplastic pituitary, the sella becomes the seat of pressure from such increasing mass within it, and finally enlarges by virtue of such pressure and the erosion produced by it. But this intrasellar pressure determines a most pronounced headache, whose site is indicated by the patient as being midway between the temples, or directly behind the eyes, these lines converging to the sella itself. And these headaches come on after some fatiguing process, mental or physical, and while they are indicative of a compensatory effort to overcome this fatigue, yet as *headache,* they unfit the patient for his daily tasks. The roentgenogram of the sella turcica in these cases clearly shows the results of the long continued pressure within it, the clinoids showing erosion, the dorsum frequently much thinning and at times even a direct break thru it..

Vasomotor Instability. The smallness of the calibre of the blood vessels signifies that very small changes in this calibre, such as occur in extremes of cold or heat, thru sympathetic nerve simulation, vagus irritation, cortical excitement or depression, and many other causative occurrences, may occasion disproportionate results, and at times even critical results in the blood vessels, and so we readily get claudication of the peripheral vessels, with the so-called digitimortui, acrocyanosis, and allied states. If these conditions obtain in the cerebral vessels, the various forms of temporary paralysis, sensory disturbances and special sense abnormality are occasioned. Such are temporary amblyopia, periodic paralysis, transient anesthesia and paresthesias.

With the smallness and tubular character of the heart, the same conditions that produce the above disturbances in the vessel bring about contractions in the coronary arteries with pain and pressure symptoms referred to the heart, and anginoid attacks are produced. These anginoid attacks, with their accompanying mental distress and anguish, play a major part in the syndrome of the psychoneurotic. The combination of fatigue, headache, dyspnea, angina, and cyanotic cold extremities brings at once to mind the picture of the neurocirculatory asthenia individual, of whom we saw so much during the war.

Gastrointestinal Disturbances. On account of the lack of smooth muscle tone in the hypoplastic states all the hollow viscera lose their internal tension and hence their elastic rotundity, with a succeeding ptosis and its accompanying symptoms of abdominal pain and distress, nausea, vomiting and alternate constipation and diarrhea. Indeed, if the pain becomes localized at any point, where the peritoneal ligaments produce kinking of the gut, then frequently is laporatomy performed for the relief of the pain and vomiting, and in the hope of finding an ulcer or an offending appendix. I have seen patients of this type after several operative procedures, without any relief whatever of their symptoms. From what has been said of the pathogenesis, this can readily be understood. Operative procedure is indicated when the ptosed viscera become fixed by adhesions but, until this has occurred, treatment without operation is highly effective. One of the smooth muscle organs whose walls lose tonic elastic condition is the bladder. As a result of this, bed-wetting in these individuals is a common accurrence.

Backache and Joint Pains. The great laxness of the ligaments thru the body in the thymic individual gives rise to various pathologic physical movements of note. Thus, the sacroiliac joint, which should be firmly fixed by ligamentory bands, becomes somewhat movable, and hence readily produces backache after little physical exertion. The tarsal joints, similarly relaxed, produce a flattening of the arch of the foot after but little walking and the pain and disability of pes planus arise.

Without enumerating any more of the somatic specific ailments and their cause that burden the hypoplastic individual, we can readily see that his symptoms and those of the psychoneurotic are strikingly similar. As a result of them it is not difficult to see that he regards himself as not up to the standards of his more fortunate companions. He sees himself built differently, his sexual organs are frequently different in their formation, his powers of endurance are much limited, he gets backache and headache with intense fatigue after mild exertion and so must give up the competitive fight. He realizes his physical inadequacies and so broods about himself and his condition, becomes shut-in, irritable, morose, asocial; his complaints are constantly varying in intensity and in their localization; and so, as this seems proof to his friends and even his physicians that no one organ can possibly be diseased where symptoms so constantly change, he gets no sympathy or understanding for his woes, and becomes really a species of outcast. Add to this that probably his cerebral vessels and circulation—as seen in the retina with the ophthalmoscope—are with the rest similarly small and inadequate, and we have a brain ill fitted to ratiocinate normally and properly. Things are not seen in their true light or proportion, and the perspective is much disturbed. Can you wonder that his complaints, bad enough as they are to begin with, are constantly exaggerated and displayed in the fore for all to see and commiserate?

The examination of many psychoneurotics in the army, in the clinics, in private work, leads me to believe that the very large majority of them are of the hypoplastic type—the type represented by status thymicolymphaticus. They may not bear all the earmarks but a goodly number of these latter are always present. Thoroly examined, these patients frequently give a thymic shadow, small heart and blood vessels, low blood and pulse pressures, distorted blood pictures in which there is usually a relative lymphocytosis, a low carbon doixide tension of the plasma, a long coagulation time; a skeleton disproportionate in its units, lax in its joints, with hyperextension thruout and subluxation a common occurrence; small and often invert type of genitals with lack of secondary sexual characteristics, gastrointestinal disturbances usually with ptosis, enuresis, and above all they show the inadequacy, inefficiency and lack of adaptability characteristic of the constitutional hyperplastic type.

The important question of course is, next to recognition, the treatment of these cases. If one is quite certain that the case before him is of this type, then the first thing to do is to explain the nature of some of the difficulties to the patient. From being laughed at, criticized and scolded, as having nothing but a diseased imagination to contend with, he at once realizes that his subjective complaints have a basis in facts, even tho these be only partially understandable to him, and that his physician has at last found an angle of attack other than a purely psychologic one. His attitude changes from one of depression and pessimism to one of hope in the possibility of cure. This is especially so when he sees that many of his seemingly unrelated symptoms, from flat foot and backache to headache and dyspnea, are all intimately related to a common series of factors.

The treatment itself may be divided into two parts: first, *general,* directed to the hypoplastic state as a whole; and, secondly, *specific,* against the individual complaints. Often the general treatment alone will suffice to ameliorate all symptoms.

General Treatment. In every adult case with a thymus still large and persistent, with large lymphoid masses in the nasopharynx and elsewhere, very small doses of iodine are extremely effective. Swingle has shown that in amphibia the thymus diminishes rapidly in size if iodine be put into their water. The iodide compound is a matter of individual choice, except that it should be a simple compound, and that potassium iodide should be avoided on account of the depressing effect of potassium salts. Sodium iodide in saturated solution, one to three drops once daily, is excellent. Frequently these patients are found extremely sensitive to iodine in all forms, in which case fractional drop doses are given in some vehicle. Under this treatment I have seen thymus shadows disappear and large tonsils shrink. The spastic contractions of the blood vessel walls seem lessened also. Caution must be used not to give large doses, as one then gets an iodine effect per se thereby, whereas the small doses are probably effective in bringing a sluggish thyroid gland to normal activity—which possibly is the keynote of the success of this part of the treatment.

Thyroid administration is in itself also of extreme usefulness, causing thymus involution, a less sluggish circulatory activity, heightened body temperature and the more rapid appearance of the secondary hair growth of mustache, beard and pubic region. Again, here ought the dose to be small. Basal metabolic determinations in these cases, while almost invariably within so-called normal limits, that is, between plus ten and minus ten, yet the large majority are in the deficient field, varying from minus two to minus eight. On all considerations, therefore, the thyroid dosage ought to be small, one-tenth to one-fourth of a grain of the Burroughs Wellcome & Company preparation, once to three times daily; or, if thyroxin is used, then one-tenth milligram must be a maximum dose. Thyroid medication also increases the blood sugar content—one of the biochemic factors of the situation, and together with adequate adrenals, or in their absence with suprarenal medication, will increase both blood and pulse pressures. The usual qualifications must always be considered in administering thyroid, the onset of tremor, rapidity of pulse rate, or great restlessness being an indication for its discontinuance.

Pituitary Medication. A consideration of the attempt that the patient is making to overcome his disabilities by virtue of his own inherent involuntary mechanisms leads us to regard the pituitary gland as one of the prime units in this mechanism. At any rate, in those cases that improve spontaneously, we invariably find an enlarged, eroded or broken-down ella tursica; this after a prolonged session of years and decades of pituitary headache. Theoretically pituitary administration is indicated to meet this apparent demand for it. Its use, properly given, is attended with great relief of the headaches, the lassitude, the low blood pressure, the low blood sugar and especially of the cardialgia and precordial distress; likewise do the gastrointestinal and bladder symptoms improve. The patient quickly realizes also that an indefinable change comes over him mentally on pituitary administration. He has more initiative, better concentration, a freer mental state and mental adaptability, so that his asocial tendencies gradually diminish.

It is a striking fact that these patients finally, if left to themselves will cease taking all their medication excepting pituitary substance, and the dosage of this they regulate themselves. They have an excellent idea of how little they can get along with and how long a period they need it. It seems to be specific for many of their complaints. Its administration is one of the niceties of therapy. Not only how much to give but the proper proportion of anterior and posterior lobes in each dose, as well as the time and period during which it is to be given. Usually it is best to begin with a small quantity of the whole gland, say one-fourth of a grain, once or twice daily, and always on an empty stomach, at least two hours after meals. If given during meals, indigestion is usually produced and its systemic effect seems to be much less. This dose may be gradually increased, if necessary, but it must never be given continually, day after day, for pressure in the head, if not actual headache, is apt to come on. Two days in three, or five days a week, are good periods for its administration. Should the patient's headache come on during the giving of pituitary, this should be at once discontinued until the headache has disappeared. It will be found, when the correct dosage has been attained, that the headaches will come on much less frequently and be less severe. If the whole gland pituitary begins to produce a rise in blood pressure, or if the pressure is fairly high to begin with, then anterior lobe pituitary ought to be added to the whole gland, for this has an effect in lowering pressure, or at least in combating the pressure principle of the posterior lobe. Also, if great obesity of pituitary character —seen in the Fröhlich types especially—is present, then large doses of anterior lobe must be added. so that a prescription for this class of patient might call for three grains anterior lobe and but one-fourth to one-half grain whole gland pituitary substance in one capsule.

Suprarenal Gland. Theoretically, this glandular product ought to be of the utmost value in the psychoneurotic but practically, unless combined with thyroid, its use is disappointing. Adrenalin, however, in spite of much that has been said and written to the contrary, has been found to be of much use when given by mouth in this state. Whether this is by direct action on the stomach and perhaps the upper intestinal tract, or whether thru systemic effect, cannot be said; but possibly it is the former that is the more important. At any rate, a noticeable better condition of stomach and gut seems to follow its use. The gastralgia improves, the gastrointestinal symptoms, nausea and vomiting diminish.

To recapitulate, a judicious use or combination of sodium iodide, thyroid and pituitary extract and perhaps to a less extent some form of suprarenal gland substance will produce marked improvement in all directions, and will show distinct gains in the measurable laboratory criteria. There will result a heightened blood sugar content, a lowered coagulation time, and a more nearly normal differential white cell count. The dyspnea, cardiac distress, fatigability, circulatory disturbances, all improve. With their improvement the patient's mental state becomes more stable and he more readily adjusts himself to his environment; his depression leaves. Curiously, the improvement is not continuous, but is step-ladder fashion. A few weeks of betterment are succeeded by a week or more of stationary or even retrogressive character and he must be warned of this in advance to counteract the discouragement that otherwise might follow. But the upward tendency predominates markedly and he soon finds himself able to cope with his problems.

Special Treatment. Visceroptosis, pes planus, backache and other special symptoms must be treated, in addition to the above general indications, by special methods. The visceroptosis, if long-continued, may have become permanent thru adhesive peritoneal bands. In such cases surgery must be done in addition to general treatment. Likewise, the intense backache produced by laxity of the sacroiliac ligaments may be overcome by various orthopedic devices, such as adhesive plaster strapping and belts, in addition to proper massage and exercise. Flat-foot also has its orthopedic measures for alleviation, which cannot be taken up at this time.

Finally, we see that the so-called psychoneurotic, far from being the uninteresting medical bore which he has long been regarded, really presents extremely interesting dynamic features which not only awaken our interest in him and his problems, but offer to us a means of approach to end his difficulties from a real biologic standpoint.

VERTEBRAL LESIONS CAUSING SPINAL CORD SYMPTOMS. *

Peter Bassoe, M. D.
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It is my purpose to present to you briefly some of the salient points in the pathology of non-traumatic lesions of the spinal column which interfere with the functions of the spinal cord, and to discuss the cord symptoms, their diagnosis, and the therapeutic indications relating to them. I will omit reference to symptoms and treatment of the bone disease as such.

The subjects to be discussed naturally arrange themselves under the following headings:

1. Inflammations of the vertebrae themselves.
2. Arthritis.
3. Tumors, primary and secondary.
4. Malformations: (a) defect malformation, (b) heteromorphisms.

INFLAMMATIONS

1. *Purulent Osteomyelitis of the Vertebrae.* This affection is rare but it is important that one should be aware of its existence, as the life of the patient depends on its prompt recognition. Children and young people are most frequently affected. According to J. Volkmann[1], who has contributed the most important article on the subject, based on 87 cases, one-half of the patients were between 8 and 17 years of age. The bone infection is frequently preceded by superficial injury and suppuration. Thus, in one of my cases, the condition resulted from the patient's stepping on a thorn, with formation of an abscess of the foot. The staphylococcus is the most frequent infecting organism. The onset is sudden, often with high fever, leukocytosis, and indefinite pains at first; later, localized pain and tenderness of some region of the spine. According to Volkmann, the vertebral arches are more frequently affected than are the bodies.

Primary osteomyelitis of the spinous processes is rare, as Gustav Rosenberg[2] in 1921 could find only 13 cases in the literature. Secondary development of osteomyelitic foci in other bones was recorded in 14 per cent of Volkmann's cases. If an early drainage is not established, rupture into the spinal canal causing fatal meningitis is prone to occur, or a paravertebral abscess may form. A correct clinical diagnosis had been made in only one-third of Volkmann's cases, the conditions most frequently mistaken for osteomyelitis being tuberculous spondylitis, typhoid fever, meningitis, pneumonia and rheumatism. To these I may add appendicitis, meningitis, and anterior poliomyelitis which had been suspected in two cases, in which I succeeded in recognizing the condition sufficiently early to advise operations leading to recovery of the patients. In Volkmann's entire series the mortality was 42 per cent, but in the cases recognized early and operated upon only 16 per cent.

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* Introductory remarks to lantern-slide demonstration of vertebral lesions. Read before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

2. *Tuberculous Spondylitis.* I desire to call attention to only a few points in connection with this familiar condition. First, that the onset of paralysis may be sudden and unattended by deformity or localized pain and tenderness. Secondly, I wish to make a plea for early laminectomy in certain cases with alarming symptoms of compression of the cord. This may be combined with an Albee operation for the purposes of securing immobilization, so as to favor healing of the bone disease.

3. *Blastomycosis.* In the generalized form of this rare granuloma the vertebrae are occasionally affected and then in a manner closely resembling tuberculosis. The first case of blastomycosis of a vertebra, with necropsy, was reported by me in 1906[3], but in this case there were no cord symptoms.

4. Other infections which are rare causes of spondylitis are typhoid fever, syphilis and actinomycosis.

ARTHRITIS OF THE SPINE

Arthritis only very rarely causes sufficient compression of the cord to produce paralysis but it is a frequent cause of irritative symptoms and plays an important role in the production of a great many syndromes, the cause of which often is very obscure. I refer particularly to so-called occipital, cervical and brachial neuralgias, intercostal neuralgia, lumbago and sciatica. When occurring in connection with arthritis of the spine these symptoms are produced, not by irritation of the spinal cord, but of the spinal nerves as they pass thru the foramina of exit. However, in many cases the resulting pains, hyperesthesias, anesthesias, and palsies may be for a long time indistinguishable from those produced by affections of the spinal cord roots. Thus, sciatica may be an early symptom of tabes and spinal cord tumor as well as of spondylitis and arthritis.

Charcot's spine, or tabetic arthropathy, like other Charcot joints, is really nothing but a non-specific osteoarthritis of an anesthetic and consequently unprotected and mobile joint. The lumbar region is most frequently affected. Both rarefaction and proliferation of bone take place, and the resulting deformity may interfere seriously with locomotion and the erect position. While the joint itself is painless, pressure or traction on spinal nerves may cause pains, anesthesias and local paralysis in the extremities. Thus, one of my tabetic patients with a very marked lumbar arthropathy developed foot drop, first on one side and then on the other. The best orthopedic treatment, according to Ridlon and Berkheiser[4], consists of a spinal support by means of a plaster, leather, or celluloid jacket.

VERTEBRAL TUMORS

These are primary or secondary, benign or malignant. Of the benign tumors, the most common is the osteoma or exostosis which may grow into the spinal canal and compress the cord, or outward and produce local neuralgias by irritating certain nerves. Thus, I have seen a case of severe pain in the arm suggesting cervical rib produced by a large osteoma of the first thoracic vertebra which projected into the pleural cavity. Extradural fibromas may start from the periosteum and be classed as vertebral tumors. Sometimes such a tumor will grow out between the arches and form subcutaneous tumors which may be of great aid in the localization of the level of cord compression. More rarely such "hourglass" tumors are caused by the growth of prevertebral tumors from the mediastinum into the spinal canal. I have seen two such cases, one of lymphosarcoma and one of a leukemic growth in a case of splenomedullary leukemia.

The most important primary vertebral tumor is the osteosarcoma, which may originate either from the body or the arches. Unlike the relatively benign intraspinal meningeal sarcomas, the vertebral osteosarcomas are quite malignant and prone to recur after operatoin. The giant-celled sarcoma of the spine, on the other hand, offers a favorable prognosis, providing compression is relieved by laminectomy, and the recoval of all visible tumor is followed by the use of radium and the roentgen ray.

Such a case came under by observation in October 1921. G girl of seven years had been paralyzed in both legs for a month prior to operation. Dr. Dean Lewis removed a vascular bony tumor of the arches of the third and fourth thoracic vertebrae. Radium was used immediately after the operation, and subsequently numerous roentgen ray treatments were given. The patient recovered completely and recent roentgenologic examination fails to reveal any tumor growth. Such cases must be rare, even admitting that they may not always have been distinguished from ordinary osteosarcoma.

In 1922, W. Rasch[5], of Sweden, could find only nine cases in the literature and adds one of his own. The first comprehensive description was given by Madelung[6] in 1907. He states that the tumor may compress the spinal cord and nerves but never infiltrates them; but it may infiltrate the skin, and in case it grows from the sacrum it may infiltrate the rectum.

The most common malignant tumor of the spine is the metastatic carcinoma which usually is found in the vertebral bodies. The most usual primary sites are the breast and the prostate, but spinal metastases may occur in connection with carcinoma of any part of the body. In the absence of a known primary cancer, these cases may pass for a long time as cases of neuritis, neuralgia or neurasthenic tender spines.

MALFORMATIONS OF THE SPINE

Absence of one or more vertebrae and complete spina bifida are so obvious that recognition is very easy. Spina bifida occulta, on the other hand, is readily overlooked unless suspicion is aroused by the presence of a dimple in the skin with a tuft of hair in its center. This often marks the site of the partial vertebral defect which usually is readily seen in the roentgenogram. Spina bifida occulta is most common in the lumbar region. A case of cervical spina bifida occulta with clumsiness and hyperextensibility of the fingers was observed in my clinic and reported by Samuel N. Clark[7].

Another important group of vertebral malformations is made up of cases, in which a certain vertebra assumes in part the morphologic characteristics of the vertebra above or below. The most familiar example is what is called "dorsalization" of the seventh cerivical vertebra, with formation of cervical ribs which may cause symptoms on the part of the brachial plexus. Recently there has been much discussion of the importance in the production of low back pain by "sacralization" of the fifth lumbar vertebra, resulting in narrowing of the bony canal of the lumbosacral cord. I have been impressed by seeing a considerable number of cases of sciatica and lumbago, in which such sacralization existed. Sometimes the pain radiates along the ureters, spermatic cords or round ligaments and an erroneous diagnosis of renal or vesical calculus may be made.

DIAGNOSTIC METHODS

In the absence of visible or palpable bone lesion, the roentgen ray is our main aid in diagnosis. A careful neurologic examination is nevertheless indispensible in order to determine whether the nervous symptoms are accounted for by the particular bone lesion. In cases of compression of the cord the level of anesthesias and hyperanesthesias, the distribution of paralysis and the condition of the reflexes are particularly important. Much information may be obtained by lumbar puncture.

In cases of compression low down, no fluid may be obtained, or the pressure is found to be very low. In this connection a very important and easily elicited sign may be mentioned. Normally the spinal fluid pressure as registered by a manometer will rise, if the jugular veins are firmly compressed on both sides. The absence of such rise indicates a "spinal subarachnoid block." This condition may be demonstrated still more strikingly by simultaneous lumbar and suboccipital puncture with comparative pressure readings and the fluid is prone to be yellow and to contain an excess of albuminous material, the so-called compression fluid. The subject of spinal block and suboccipital or cistern puncture has been thoroly discussed by James B. Ayer in numerous papers[8].

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Note. Many of the cases referred to in this paper will be found described and illustrated in International Clinics 1922, Vol. III, Series 32.

Right Paraduodenal Hernia

Right paraduodenal hernia constitutes a rare form of internal abdominal hernia. Twenty-eight authentic cases have been previously reported, to which Gunther W. Nagel, Rochester, Minn. Journal A. M. A., Sept. 15, 1923), adds one. This form of hernia may arise in the fossa of Waldeyer, or in the type of inferior duodenal fossa described by Nagel. Clinically, no sharp dividing line can be drawn between hernias of the left and right types. Nagel has not been able to find a reported case in which right duodenal hernia has been correctly diagnosed clinically. If patients have obscure intestinal complaints, and particularly if they have symptoms of acute obstruction, the possibility of the presence of internal hernia must be borne in mind. At operation it is important to recognize the type of hernia, so that reduction may be effected with dispatch, and without injury to vital structures.

BLOOD CHEMISTRY IN THE STUDY OF NEPHRITIS AND THE TOXEMIAS OF PREGNANCY*

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Efficient work in the study of the chemistry of the blood began in 1913 with the development by Folin and Denis[1] of an accurate method for determining the non-protein nitrogen. Since then methods for determination of additional substances have rapidly been added. As our knowledge becomes broadened and technical procedures are made more simple, a chemical analysis of the blood becomes an essential to the satisfactory understanding of the patient who comes to us with symptoms suggestive of that group of cases, in which fall the chronic nephritic, the decompensated cardiac, the case of essential hypertension, the ateriosclerotic, etc. With the establishment of the fact of such conditions as the albuminuria of adolescence without kidney damage; with the extended investigation of cases showing both albumin and casts without other evidence of deranged kidneys, the conclusion must be admitted that the state of the urine is not a final criterion of the extent of the kidney damage.

The list of methods for examining the function of the kidneys is long. Many methods have rapidly been discarded, but because blood chemistry gives a definite idea whether or not substances which it is the normal business of the kidneys to excrete are being eliminated, it is believed that it has a permanent place in the study of nephritis and other conditions of disturbed metabolism. The excellent and well established method of estimating kidney function, such as the phenosulphonephthalien, water concentration and urea concentration tests, or the Mosenthal two hour test are of unquestioned value for thoro study of a case, but are merely mentioned here.

In the study of the blood in nephritis interest rests chiefly on the non-protein nitrogen bodies. The blood sugar and carbon dioxide combining power of the plasma are also of importance in some cases. Tho the non-protein nitrogen makes up only about one per cent of the nitrogen of the blood, it is important because it represents the metabolic processes of the body. Up to the present it has been found to consist of urea nitrogen, uric acid, creatinine, amino-acid and ammonia nitrogen, and an undetermined fraction. The difference between the non-protein nitrogen and the sum of the urea nitrogen, uric acid and creatinine is spoken of as the rest nitrogen. This consists of the amino-acid and ammonia nitrogen and the bodies of unknown origin and composition. The customary routine consists of a determination of the urea nitrogen, uric acid, creatinine and sugar.

Myers[2] has shown that of the non-protein nitrogen substances, uric acid is the most difficult of elimination, urea next, while creatinine is eliminated with the least difficulty. Consequently, in the development of a nephritis we find first a retention of uric acid. As the condition progresses we see an accumulation of urea, while in advanced cases we have also high creatinine values. MacLean[3] of London believes that estimation of the urea nitrogen gives all the information desired of the blood in nephritis. Except for research work he believes estimation of the uric acid and creatinine content of the blood to be superfluous. He admits, however, that urea is increased markedly in the blood only when the nephritis has become advanced, and associated symptoms may render the diagnosis fairly certain. Recent work of various investigators would tend to indicate that estimation of all these substances is of value in showing the presence of early nephritis and gauging its progress.

Normal values for urea nitrogen are usually given as 12 to 15 mgm. per 100 c.c. of blood. The urea, being largely exogenous in derivaton, may vary from time to time according to the diet. Figures above 20 mgm. are considered by Myers[2] as pathologic. Normally the urea nitrogen represents about 50 per cent of the total non-protein nitrogen. In nephritis this percentage may reach as high as 80. This is in contrast with the condition obtaining in eclampsia, where the urea-non-protein nitrogen ratio is below 50 per cent and may reach as low as 15 per cent. In the past three years that we have been doing work in blood chemistry our cases of severe nephritis have been few. Consequently our findings for urea nitrogen have a low average. Even in a case of bichloride of mercury poisoning, in which death ensued, the urea nitrogen reached only 68.8 mgm. These low figures in the last case are accounted for by the fact that the onset of the nephritis was sudden and there was no opportunity for accumulation of urea for none was ingested. Myers[2], Williams[4] and others report figures for urea nitrogen up to 300 mgm. per 100 c.c. of blood.

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* Read before the Forty-ninth Annual Meeting of Oregon State Medical Society, Portland, Ore., July 10-11, 1923.

CHART No. 1 Blood Chemistry of Cases of Nephritis and Cases to be Differentiated.

Case No.	Date	Urea N. M M PER 100 C C	Uric Acid M M PER 100 C C	Creat-inine M M PER 100 C C	Sugar per cent	Alb'm'n	Casts	Blood Pressure	Remarks
3	4-8-21	54		54	0.11	4 plus	4 p'us		Myocarditis, Passive Hyperemia. Acute Dilation. Died.
5	5-12-21	68 S		40		2 plus	2 plus	120-75	Bichloride Poisoning.
14	6-7-21	40 6		10				240-140	Chronic Nephritis, Hypertension. Died with symptoms of Uremia.
	6-18-21	84 03		13 4	0 18				Phthalein 5 per cent.
16	6-5-21	28 4		3 5	0.09	2 plus	2 plus	190-100	Hypertension, Polyneuritis.
	11-14-21	11 5	1 1	2 1	0 095				
28	6-27-21	22.3		6.9	0.38	3 plus	3 plus	115-85	Diabetes.
32	7-1-21	18.1		3 1	0.13	2 plus	2 plus	165-95	Hypertension. Diabetes.
41	8-20-21	37.8		4 1	0 16	3 plus	2 plus	180-90	Endocarditis, Purpura. Chronic Nephritis, Phthalein a trace
	8-26-21	57 1	5 08	9.3	0 15				
46	9-29-21	18.5	1.8	1.5	0.14	plus	0	190-120	Hypertension Syncopal attacks.
55	9-14-21	15.9	0 68	2.3	0 13	plus	plus	155-75	Acute Alcoholism Coma following automobile accident
95	3-11-22	18.5	3.3	2.2	0.14			115-80	Myocarditis. Marked Anasarca.
103	4-17-22	25	2 6	2.05	0.11	0	0	140	Dizziness. Beginning Nephritis.
105	4-21-22	24 3	4 1	2	0.19	3 plus		175-90	Tertiary Syphilis, Hypertension with severe Epistaxis, Edema of face.
	5-9-22	18 6	3 1	2.3	0.31				Diabetes.
	5-7-22	21 2	5.7	1.9	0.31				Oral Sepsis.
106	4-24-22	27 1	10 2	1 9	0.14	2 plus	3 plus	120	Gout.
111	5-13-22	36.3	2 3	2 4	0 11	4 plus	3 plus	240-120	Hemiplegia, Hypertension, Acute Nephritis, Hematuria.
	6-15-22	42 3	6.7	2.9	0 17				
250	6-28-23	9 05	3.1	2.03	0 108	4 plus	2 plus	220-145	Parenchymatones Nephritis.

In these severe cases of nephritis the uric acid and creatinine also reach high points. In general, in the case not on a diet, the extent of the urea nitrogen retention may be taken as an index of the severity of the disease.

That accumulation of urea in the blood is not the cause of uremia has been fairly well proven by work in blood chemistry. MacLean[3] has pointed out that in cases of uremia with excessively high urea nitrogen retention, a strict carbohydrate diet will cause the urea nitrogen to drop to figures that are nearly normal, yet without abatement of the uremic symptoms. Such is the condition, we believe, in our cases 5, 14 and perhaps 41 in chart 1. MacLean also states that reduction in the urea nitrogen is no criterion of the efficiency of treatment, unless the patient is on the same diet he received when the blood urea was found to be high.

Conditions other than nephritis showing some degree of retention of urea are malignancy, pneumonia, intestinal obstruction, lead poisoning, syphilis, cardiac conditions, gastric and duodenal ulcer, and concentration of the blood from withdrawal of fluids (Myers[2], MacLean[3]). Turning to the uric acid we find that it lies normally between 1 and 2 mgm. per 100 c.c. of blood. In acute nephritis and early interstitial nephritis there is a definite rise in the uric acid of the blood with scarcely any or no rise in the urea nitrogen or creatinine. In parenchymatous nephritis the blood findings are hardly different from normal, except that there may be a slight rise in the uric acid, the urinary findings being out of all proportion to the condition of the kidneys as revealed by the blood. This is well illustrated in chart 1, case 250. In advanced interstitial nephritis the uric acid may reach as high as 27 mgm., the highest observed by Myers[2]. Uric acid retention in the blood is considered by some (Myers, Fine and Lough[5], and Baumann, Hansmann, Davis and Stevens[6]) to be one of the earliest indications of renal impairment and one of the best indices of renal disability that we have. High uric acid figures are obtained also in gout, leukemia, primary anemia, lead poisoning, x-ray exposures, etc.

A condition showing uric acid retention which must be differentiated from beginning nephritis has been discussed by De Niord and Bixby[7]. In work covering blood chemistry findings in several hundred cases these observers found that there is such a constant retention of uric acid in the blood of patients having focal infection that they speak of this finding as an "invariable diagnostic factor." They argue that, whenever a tissue breaks down or undergoes degeneration, as occurs in abscesses or infected areas, there is a breaking down of nuclear material, nucleoprotein, the forerunner of uric acid in the process of metabolism. With the prolonged formation of uric acid in excess there will be an accumulation in the blood considerably before it appears in the urine in abnormal amounts. The other conditions, with the possible exception of beginning nephritis, in which retention of uric acid occurs, are fairly characteristic and can be ruled out by other means. Therefore, they believe that in the absence of these characteristic conditions, a uric acid reten-

CHART No. 2 Cases showing High Uric Acid.

Case No.	Date	Uric Acid	
41	8-20-21	5.08	Chronic Nephritis, Endocarditis, Purpura, Tonsillar Infection.
52	9-9-21	3.1	Frontal Sinusitis, Severe Headaches.
59	10-11-21	4.5	Chronic Bronchitis, Asthma.
76	9-8-21	3.6	Abdominal Arterio Sclerosis, Tertiary Syphilis
90	2-3-22	3.75	Chronic Colitis.
94	3-9-22	4.	Chronic Tonsillitis, Lumbago.
101	4-12-22	3.9	Epilepsy.
105	6-27-22	5.7	Oral Sepsis, Tertiary Syphilis, Diabetes.
106	4-24-22	10.2	Gout, Repeated Attacks.
112	5-17-22	3.01	Myocarditis, Cystitis.
117	6-1-22	3.9	Tonsillar and Dental Infection, Headaches
121	6-20-22	5.7	Chronic Bronchitis, Oral Sepsis.
122	6-20-22	4.5	Oral Sepsis, Ulcerative Cystitis.
125	6-24-22	4.7	Pleurisy with Effusion following Influenza.
133	7-27-22	4.	Pyorrhoea, Myositis, Headaches.
140	7-30-22	3.6	Oral Sepsis.
141	8-19-22	7.5	Chronic Bronchitis.
142	8-21-22	7.6	Furunculosis, Cystic Kidney.
143	8-21-22	4.1	Ethmoid Sinusitis, Severe Headaches.

tion points to a focus of infection somewhere in the body. They state that an elimination of all foci of infection is invariably followed by a return to normal of the uric acid. The work of Ophuls, showing the frequent relationship of a history of infection of the tonsils in early life to chronic nephritis, is of interest in this connection in regard to the relationship of foci of infection in the etiology of nephritis.

This observation leads us to collect in chart 2 our cases showing high figures for uric acid. The number of cases showing easily demonstrable foci of infection is striking. Unfortunately a great many still retain their foci and subsequent examinations have not been made in those who have had them removed.

The other nitrogenous substance commonly retained in nephritis is creatinine. As it is the most easily eliminated of the non-protein nitrogen metabolites, it is the last to be retained in nephritis. Figures for the normal are given as 1 to 2 mgm. per 100 c.c. of blood. Retention of over 3.5 mgm. is considered to indicate severe kidney pathology, while over 5 mgm. are, according to Myers[2], indicative of a fatal termination in a few months. Our experience would tend to indicate that high creatinine retention is seen rarely except in terminal conditions. We have collected our cases showing marked retention of creatinine. All are dead except one, who has been lost sight of but it is believed that he is still living. Another remained in fair condition for several months and then suddenly died in uremia. MacLean[3] places no value in a high creatinine, as he has had several cases under observation for more than two years with creatinine figures over 5 mgm. We consider high figures for creatinine of value, especially in uremia where treatment has caused a disappearance of the marked urea retention.

An observation of value and interest in connection with chronic nephritis with nitrogen retention has been made by Berg, of Mt. Sinai Hospital, New York. In most complete clinical and laboratory investigations he has shown that only in those cases of nephritis who have a marked nitrogen retention is there an anemia. The anemia is usually without edema and is in direct proportion to the degree of retention of nitrogen. In these cases there is often a high color index, simulating pernicious anemia. The nitrogen retention of severe cachectic conditions which also shows an anemia is by no means so intense as in the nephritic anemias. Blood chemistry, then, offers a reliable means of differentiating the nephritic anemias from the idiopathic and cachectic anemias.

In addition to nitrogen retention in the blood there are changes in some of the non-nitrogenous substances which are of importance. In acute nephritis and terminal interstitial nephritis there is often an acidosis. This can be determined and treatment guided by estimation of the carbon dioxide combining power of the plasma.

In advanced interstitial nephritis there is an elevation of the threshold of sugar excretion, so that figures as high as 0.3 per cent may be obtained without glycosuria. Such a case is No. 105 on chart 2. He was admitted as a nephritic. There was no sugar in his urine on admission and rarely thereafter. Routine blood chemistry showed blood sugar to be 0.25 per cent. A diagnosis of diabetes would not have been made without blood chemistry.

Estimation of the urea nitrogen of the saliva has not been done by us, but reports indicate that it may be of value in pointing to a nitrogen retention in the blood, where it is difficult and undesirable to obtain the latter.

When we approach the subject of the toxemias of pregnancy, we find a condition differing from that obtaining in nephritis and far different from what we should expect from observation of the clinical picture and urinary findings. Before the advent of blood chemistry the toxemias of pregnancy were

CHART No. 3 Complications of Pregnancy from our own cases.

Case No.	Date	Urea N. MGM 100 C C	Uric Acid MGM 100 C C	Creat-inine MGM 100 C C	Sugar p cent	Alb.	Casts	B. P.	Para	Mon.	
1	5-21-21	15.29				4 plus	3 plus	160-100	I	6	Premature Separation of Placenta. Abdominal Section.
2	6-11-22	10.7		1.5		0	0	115-60	II	6	Toxic, first Pregnancy, Paroxysmal Tacchycardia, B P in attack 60-40, Otherwise normal.
3	9-6-21	8.3	2 2	1.7	0 109	3 plus	plus	225-120	V	6	Pre-eclamptic, Edema, Retinitis, Second time Toxic, One Normal Pregnancy intervening, Induction of Labor.
	9-19-21	12.07	2.4	1.5	0 097	3 plus	plus	225-120	V	6	
4	10-27-21	18.1	5 7	2.7	0 10	4 plus	4 plus	150-110	I	3	Premature labor in 7 months. Macerated Fetus.
5	12-23-21	15.9	1.9	2.1	0 13	2 plus	2 plus	120-80	I	1	Acetone four-plus, Dilation with Curettment, Died
6	1-3-22	13.5	0 83	1 9	0 079	4 plus	4 plus	240-120	IV	6	Toxic during previous Pregnancy. First two normal. Premature labor at 7½ months. Baby died, 3 days.
7	2-14-22	7.3	2.3	2	0 11	plus	2 plus	120-0	II	8	Twin Pregnancy, marked Secondary Anemia.
8	6-30-22	10.8	1 4	2 4	0 12	4 plus	4 plus	180-20	I	8	Admitted in Coma. Blood taken during Convulsion Premature Labor.
9	8-8-22	10.5	6 3	1 6	0 072	plus	plus	200-70	III	3	Hyperemesis, Acetone four-plus. Diacetic Acid four-plus.
10	8-30-22	10.7	7.6	2 2	0.18	4 plus	4 plus		I	term	Admitted in Coma. Blood taken during Coma Edema four-plus. Abdominal Section. Died.

looked upon as evidence of failure of kidney function with greater or less degree of actual structural damage to the kidneys. With such an interpretation one would expect the blood findings to be similar in kind if not in degree to those found in nephritis not associated with pregnancy.

That we must look further than a renal deficiency for an explanation of the manifestations of the toxemias of pregnancy is at once apparent from a review of the blood chemistry findings obtained in women suffering from these conditions. With the exceptions of those cases of pregnancy occurring in women who already have nephritis, the blood findings do not point to serious disturbance of the kidneys, until the toxemia has progressed to such a stage that kidney injury ensues as a result of the toxins formed. While the characteristic finding in nephritis is the retention of urea nitrogen, it has been in the toxemias of pregnancy that we have obtained our lowest reading for this substance. Blood taken from eclamptics, even during convulsion or coma, has shown urea nitrogen values at the lower limits of normal. Most workers report increase in uric acid, tho some state that this is not retained in the cases investigated by them.

Creatinine is not retained until the intoxication has progressed to a marked degree. Then it is probably an indication of severe kidney damage. Some report increase of creatinine as the result of muscular activity during convulsions. Some also have found an increase in the blood sugar at these times.

Moran[9] concludes that the blood chemistry findings in the toxemias of pregnancy are of uncertain value, both from diagnostic and prognostic view points. He believes that the ordinary examination of the urine and observation of the blood pressure are of far greater value in foretelling a threatened eclampsia than are chemical analyses of the blood. Pollack[10] agrees in regard to the disappointing factors of the blood chemistry findings. He feels that there is nothing about them that gives a reliable indication of what is occurring, so he depends on the clinical picture and the blood pressure rather than anything else.

In our work blood chemistry findings, based on the routine determination of urea nitrogen, uric acid, creatinine and sugar, lead us to agree with the opinion of those who have been quoted regarding the inclusiveness of the information obtained in this way. Some of the results obtained in our cases are shown in chart 3. We have found the urea nitrogen low, the uric acid increased perhaps more often than normal, while the creatinine and sugar have been found to be normal even in cases of convulsion at the time the blood was taken.

Killian[11], however, admits the fact of the inclusiveness of the evidence given by an examination of only the urea nitrogen, uric acid, creatinine and sugar, but he feels that no analysis is of great value in pregnancy that does not include an estimation of the total non protein nitrogen, so that the urea-non-protein nitrogen ratio can be determined. He discusses the chemistry of the toxemias of pregnancy under the headings of nephritic toxemia, acute yellow atrophy of the liver, hyperemesis gravidarum, preeclampsia and eclampsia.

The results obtained in the nephritic toxemias are like those obtained in chronic nephritis under any conditions. Nephritic toxemia may be differentiated from the other types of pregnancy toxemia by the relatively high portion of the total non-protein nitrogen represented by the urea nitrogen, usually 50 per cent or over.

In acute yellow atrophy of the liver he finds a distinct increase in the amino-acid nitrogen of the blood. With the possible exception of acute phosphorus poisoning, this is the only clinical condition in which abnormal quantities of amino-acid nitrogen are found in the blood. Methods for determination of amino-acid nitrogen are at present better suited for the research than the clinical laboratory.

In hyperemesis gravidarum there is an increase in the total non-protein nitrogen with urea nitrogen which may be normal or may be below normal. There is an increase in uric acid which, as a rule, is less than in eclampsia, the creatinine, sugar and chlorides being normal. The decrease in the carbon dioxide combining power that is reported is probably a result of the hyperemesis and starvation.

In preeclampsia and eclampsia the non-protein nitrogen is increased, with a low urea nitrogen percentage. This indicates a high rest nitrogen. As the amino-acid nitrogen is normal in these cases, the high rest nitrogen is made up of the undetermined nitrogen factor. Increase in the rest nitrogen has a somewhat definite relation to the extent of the toxemia. In the preeclamptic the increase in the rest nitrogen is slight. With the development of the eclamptic state the rest nitrogen figures become high, decreasing as effective treatment is provided. Killian believes that the substance causing the toxemia are components of this rest nitrogen but their nature is still unknown.

Ewing and Wolf state that persistent toxemia tends to cause a progressive involvement of the kidneys, so that with the development of severe toxemia there occurs an extensive kidney damage and retention of those nitrogenous substances which are found increased in advanced nephritis. That is, the toxemias of pregnancy are not due primarily to failure on the part of the kidneys, but are due probably to some portion of the rest nitrogen whose accumulation causes kidney damage, which later may be expressed by the retention of other nitrogenous materials, as in the ordinary nephritis of the non-pregnant.

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Obstruction of Pulmonary Veins. (Surgery, Gynecology and Obstetrics, Oct., 1923), Karl Schlaepfer summarizes as follows:

SUMMARY

Our experiments on dogs demonstrate the formation of collaterals between the pulmonary and systemic circulation consequent to the chronic stasis following partial occlusion of the pulmonary veins of one lung in man. Guyot's injection experiments on the cadaver prove that a chronic obstruction to the blood flow in the pulmonary vein with pleural adhesions is the main factor in initiating the formation of these collaterals, nature endeavoring thus to counteract an increasing stasis in the lung. The enlargement of the normal venous pathway from the lung into the azygos vein (bronchial veins) is an additional factor used by nature in overcoming the chronic obstruction in the superficial pulmonary veins. The formation of new collaterals to the veins of the upper thoracic aperture is of greatest clinical importance. Having the pathologic-anatomical picture of this condition in mind, special attention is indicated in any cases of chronic lung tuberculosis when performing a puncture for diagnostic or therapeutic (pneu-mothorax filling) purposes. When breaking up adhesions in the wall of a partial pneumothorax by elevating the pressure in the cavity, air embolism through these collaterals may occur (Zink). But also in other chronic inflammatory conditions (abscess bronchiectasis) the same precautions are indicated to prevent sudden, serious complications due to air embolism (puncture). During pneumolysis, pneumotomy, and pneumectomy we have always to face the possibility of the existence of these collaterals as a complicating factor. Beneke's case illustrates very well the clinical features of an air embolus of this type. The main danger in these operations is air embolism through the pulmonary veins and the left heart, as described exhaustively in my monograph on the intrapleuhal reflexes (17). The knowledge of these two sources of complications in various inthathoracic operations allows the surgeon to prevent the occurrence of air embolism by taking special precautions when working in certain localities of the lung surface—those adherent to the chest wall or to the mediastinum. Preventative therapy is best. When confronted with an air embolus, stop the operation immediately; pack the wound thoroughly; lower the head and thorax (Trendelenburg position) so that the place of injury is situated below the level of the heart. This diminishes at the same time the danger of an air embolus into the brain. Stimulants may be used to strengthen and reinforce the heart action. Puncture of the right auricle and aspiration of the air, as advised by Delore (18), will prove very efficacious.

THE CLINICAL IMPORTANCE OF THE VITAL CAPACITY OF THE LUNGS

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(Concluded)

There are, however, certain definite limitations to the clinical use of spirometry. Apart from the difficulty already mentioned of obtaining entirely satisfactory normal standards, the most important of these is the unwillingness or inability of certain persons to cooperate to the full extent of their ability. The test is not wholly objective and it is worthless unless the subject cooperates completely. This difficulty is met with in patients who do not understand what is desired, in very sick patients, and in certain highly neurotic individuals who are incapable of either mental or physical effort. The low vital capacity in certain "effort syndrome" cases in the army was undoubtedly due more to a weakness of will than to a weakness of muscle or to a pathologic respiratory system. For practical purposes, however, it is extremely important that, after a little practice, one is rarely deceived as to whether one is getting satisfactory observations and inaccurate or misleading results can be discounted or neglected.

The question of the effect of general physical weakness must also be considered, when determinations are made on persons who have been sick for a long time. This point has not been worked out completely but that it is less important than might be expected is indicated by the fact that patients wih pernicious anemia, a disease with a prolonged course in which general weakness is a prominent feature, usually have a vital capacity of more than 80 per cent of the normal. Fatigue or weakness of the muscles of respiration also appear to be relatively unimportant factors. This was shown by observations on a group of patients with severe heart disease and low vital capacity. An attempt was made to tire out the muscles of respiration by taking the vital capacity every 15 seconds for 10 minutes, but at the end of the 40 observations the vital capacity was just as high as at the beginning.

Of the diseases in which the vital capacity of the lungs has been studied pulmonary tuberculosis has received the most attention. Hutchinson, in 1846, placed much emphasis on the significance of spirometry in the early diagnosis of phthisis and gives an interesting account of his experience with Freeman, the American prize fighter, then visiting England. At the first observation, in 1842, he was found to have a high vital capacity of 434 cubic inches, but two years later it had fallen to 344 cubic inches. At this time he was in ill health, but two physicians could find no evidence of pulmonary disease by auscultation. Freeman subsequently died, however, and at autopsy an extensive tuberculosis of the lungs was found. Wintrich, Arnold, and others also believed the method to have diagnostic value and the former considered that the vital capacity was of aid in prognosis. Low values in phthisis were later reported by many investigators and in 1918 Garvin, Lundsgaard and Van Slyke, using normal standards based on the chest volume, found a slight decrease in incipient cases and a considerable decrease in advanced cases of pulmonary tuberculosis.

The development of other improved methods for studying tuberculosis, however, relegated spirometry complete into the background until Dreyer and Burrell, attacking the subject with better normal standards, again advocated its use in 1920. As a result of their study of a considerable series of cases they concluded that it is of value in the classification of patients, in that this can be done on the basis of a numerical value instead of as the result of personal interpretation of physical signs, and that it is particularly helpful in following the course of the disease and the effects of treatment.

These results have since been confirmed in the United States by Wittich, Meyers and Jennings, who investigated 174 cases of pulmonary tuberculosis and again found a close correlation between the vital capacity and clinical condition. In arrested cases the vital capacity was very near the normal value. In a later publication Dreyer has reported new observations in harmony with those in his first paper and Cameron has found, in 198 cases, a correlation between the anatomic changes in the lungs and the vital capacity which is so close as to give vital capacity determination a definite place as a supplementary method in diagnosis and prognosis.

Scattered observations have been made on the vital capacity in other pulmonary conditions, such as acute bronchitis, emphysema (Wintrich, Peabody and Wentworth, Hoover, Siebeck), asthma (Wintrich, Peabody and Wentworth), pneumonia (Wittich, Myers and Jennings), pneumothorax (Means and Balboni), and pleural effusion (Pick, Peabody and Wentworth), but no comprehensive studies have as yet been made. In this connection it is of interest that Graham has shown that the vital capacity is also of importance to the surgeon in the operative treatment of empyema, for, used in connection with a mathematical formula devised by him, it will indicate approximately the maximum opening in the chest wall compatible with life, if the mediastinum is not stabilized by adhesions.

When one considers the close relationship which exists between the vital capacity of the lungs and the production of dyspnea, it is rather curious that until comparatively recently almost no attention has been paid to spirometry in the clinical condition, in which dyspnea is the most prominent phenomenon. Heart disease manifests itself more frequently by the production of dyspnea than by any other symptom, and the degree of dyspnea or the tendency to dyspnea has always been regarded as a rough index of the severity of the case and of the degree of circulatory failure. If the vital capacity of the lungs is an expression of the tendency to dyspnea, as has already been shown, then it is apparent that the vital capacity may also serve as an index of the clinical condition in patients with heart disease. Many observers (Arnold, Rubow, Bittorf and Forschbach, Siebeck, and others) have shown that the vital capacity may be decreased in heart disease, but it is only within the last few years that the subject has been carefully studied and an attempt made to correlate the vital capacity with the clinical condition.

Briefly, the observations on a large number of patients first made at the Peter Bent Brigham Hospital, and subsequently confirmed at the Boston City Hospital, have shown that in the early stages of cardiac disease, when there is no evidence of circulatory insufficiency, the vital capacity is within normal limits. As the condition progresses and the cardiac reserve becomes encroached on so that physical exertion produces undue dyspnea, the vital capacity decreases and the diminution in vital capacity parallels very closely the development of the disease. If the vital capacity is below 40 per cent of the normal, the patients are greatly limited and are practically bed-ridden. If it is below 25 per cent, they are generally so severely decompensated that they are orthopneic and suffer from dyspnea even when they are quiet in bed. With a vital capacity above 40 per cent of the normal, patients can usually be out of bed but, unless the vital capacity is over 50 per cent, they are severely handicapped and become short of breath if they attempt to do more than walk slowly about the room. Even with a vital capacity of 60 to 70 per cent they can rarely expect to lead anything but a very quiet lift. With a vital capacity of 70 to 80 per cent patients can often carry on a normal existence, limited by the fact that any unusual exertion produces dyspnea. If such subjects are working, they must usually have an occupation adapted to their restricted cardiac reserve. An essentially similar relationship between functional condition of cardiac patients and the quantitative decrease of vital capacity has recently been reported by Ulrich and Nathanson as the result of observations on 84 cases.

The determination of the vital capacity gives a good indication of the amount of physical exertion that one may expect a patient to undertake without the production of dyspnea and the information may be obtained while the subject is remaining quietly in bed. Its chief value is thus in following the course of the disease and as a guide to treatment. In ambulatory cases of heart disease the physical examination usually alters very little over long periods and opinion as to the course of the disease must then be based largely on the patient's recital of his symptoms. The most important of these is the tendency to dyspnea and in the vital capacity one has a quantitative method of following the development of this symptom. Changes in the vital capacity may occur without any objective evidence of cardiac insufficiency, such as pulmonary edema, tender liver, or swelling of the ankles. It may thus be an early indication for active treatment. In severely decompensated cases, such as one finds in a general hospital, the vital capacity is very low at first, but with satisfactory treatment it will rise quickly.

Pratt and West have shown the value of spirometry in following cases after the administration of digitalis. It is of particular interest in cases with a regular cardiac rhythm, in which digitalis has little effect on the heart rate, for the alterations in vital capacity are among the best objective indices of the effect of digitalis in promoting clinical improvement. Charts on which the vital capacity is plotted from day to day give an excellent graphic record of the course of the disease. With improvement in the circulatory condition, the vital capacity rises; if the situation becomes worse, it falls; and if the condition remains stationary, the vital capacity does not change. One may thus have a graphic record of the course of the case which is of distinct aid in prognosis, and which gives more definite information as to the functional condition of the patient than do any of the other records which are customarily kept. If, after several weeks of rest in bed and the administration of one or two courses of digitalis, the vital capacity reaches a constant level and shows no tendency to increase, it is fair to assume that little further clinical improvement is to be expected and one may begin to plan a life for the patient which is in accord with the limits one would expect to correspond to the decreased vital capacity. If, on the other hand, after prolonged treatment, it is found that the vital capacity is gradually rising, one may be certain that a continuation of the same strict treatment is indicated until the maximum vital capacity is attained. The clinical condition of the patient may show little apparent change from week to week and, unless he is allowed up and tested, as by the effect of exercise on the production of dyspnea, it may be difficult to estimate whether or not he is improving, but observations of the vital capacity give distinctly useful information as to the changes in the functional condition of the circulation, which may be obtained while the patient is still being kept at complete rest.

In the advanced stages of heart disease it is easy to see what may cause the reduction in the vital capacity, for general physical condition, pulmonary edema, pleural effusion, hepatic enlargement, and analogous conditions will all affect the movability of the lungs. The decrease in the early stages, however, before any physical signs develop, is less easy to understand. Many years ago the Viennese clinician, von Basch, suggested that an important factor in the production of cardiac dyspnea is an engorgement of the pulmonary circulation which results in an interference with the elasticity and movability of the lungs and produces what he termed a "Lungenstarrheit." The lungs are extremely vascular organs and in a way simulate an erectile tissue, so it is quite conceivable that, if the vessels were very congested with blood, the lungs would become more rigid than normal and their movements with respiration would be limited.

Quite recently Drinker, Blumgart and I attempted to test this theory by animal experimentation. The hearts of cats were exposed by opening the pericardium and an adjustable clamp was placed round the pulmonary veins. By means of a specially devised artificial respiration apparatus the lungs were ventilated by air delivered under constant pressure and the amount of air entering the lungs under normal conditions was measured. The clamp on the pulmonary veins was then tightened and the outflow of blood from the lungs to the heart was hindered much as it is in clinical mitral stenosis. Air was still delivered to the lungs under the same pressure, but the measurements showed that much less air entered them with each respiration and, while the engorgement of the pulmonary vessels was maintained, the interference with the entrance of air into the lungs persisted.

It is not difficult to translate these results into the field of clinical medicine and to see in them an explanation of the decrease in vital capacity in the early stages of heart disease. In a case of mitral stenosis, for instance, the earliest evidence of circulatory insufficiency is usually the development of dyspnea on slight exertion. Physical examination at this time may show absolutely no change to account for the new symptom, but the vital capacity is decreased. One may interpret this as meaning that with a weaker myocardium the valve lesion is more potent in obstructing the outflow of blood from the lungs, so that the pulmonary vessels become engorged, and the respiratory movements of the lungs become interfered with. At a later stage there is clinical evidence which also indicates that this mechanism is taking place, for the production of pulmonary edema and pleural effusion are certainly due to exudation from the pulmonary vessels, resulting from the increased pressure and obstruction to the outflow of blood from the lungs. It is, of course, entirely reasonable to assume that this period which is associated with exudation of fluid is preceeded by a period of engorgement, in which the pressure in the pulmonary vessels is not high enough to allow the fluid to pass out of them. This would correspond to the clinical stage in which there are no abnormal signs in the lungs, but in which the vital capacity is decreased.

The practical significance of this is obvious. In most cases of heart disease the earliest symptoms of circulatory failure are referred to the respiration and are due to disturbance in the pulmonary circuit—the dyspnea precedes peripheral edema. By the ordinary methods of physical examination we can obtain no information about this hidden region until the condition is far advanced, but the measurements of the movability of the lungs by the determination of the vital capacity give evidence of early changes in the pulmonary circulation and indicate, quantitatively, their progression or regression. Any information regarding such a highly important division of the circulation as the pulmonary circuit must have a practical value in the diagnosis and treatment of heart disease and at present no method tells so much about it as the determination of the vital capacity of the lungs.

Such, then, is briefly sketched the present relation of spirometry to clinical medicine. The development of more modern methods for the study of disease has resulted in the overshadowing of what was once regarded as a useful aid to diagnosis and prognosis, but none of the newer procedures gives the same type of information as is obtained from observations on the vital capacity of the lungs. With the general interest now manifested in disturbances of physiologic function in disease, it is probable that the mechanism of the external respiration will receive its share of attention, and as an index of the ventilatory function of the lungs, the determination of the vital capacity will be of considerable value.

The Relation of Right-sided Abdominal Pain to Right-sided Disease

Pain in the right side of the abdomen, says R. C. Coffffey, Portland, Ore., (Journal A. M. A., Sept. 15, 1923), is one of the most frequent phenomena encountered by the clinician in the routine examination of patients. This is due in a large measure to the fact there are several organs located in the right side of the abdomen which seem especially liable to disease. These are the gallbladder head of the pancreas, right kidney, the appendix and the right ovary. Much of the pain encountered in the right side of the abdomen is due to organic disease of one of these organs. As knowledge of these diseases has developed in the past, these organs alternately from time to time have been held responsible for most of the pain encountered in the right side of the abdomen. Two points of view have been held. One is that practically all the real pain in the right side of the abdomen has been due to organic disease, and some surgeons accordingly have removed organs located on the right side of the abdomen at the slightest provocation or excuse. Those holding this view have been sadly disappointed in the result, and this disappointment has led to another view, which holds that the real pain is due to organic disease but that there are many imaginary pains found usually in neurotic patients and located in the right side of the abdomen, and that such pains are not for the surgeon but for the neurologist to treat. Therefore, surgeons holding the latter view claim to be very conservative. They remove only those organs actually diseased and close the patient's abdomen without doing anything further. These patients are thereby consigned to a life of suffering which, in my opinion, is just as real and just as well founded as organic disease. These pains can usually be relieved just as certainly by physical and surgical measures as can the definite organic diseases. It is right and proper, in Coffey's opinion, that a conservative surgeon should decline to remove a normal appendix, a normal gallbladder and normal ovaries in which pathologic changes cannot be demonstrated either macroscopically or miscroscopically.

THE SURGICAL TREATMENT OF PERSISTENT THYROGLOSSAL DUCT*

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Anomalies associated with the development of the thyroglossal duct cannot be called common, yet one cannot speak of them as altogether rare. Their occurrence is sufficiently common so that they are apt to be mistaken for abscesses about hair folicles, branchial cysts, tuberculous sinuses and the like, unless one remembers the dogmatic teaching that all midline cervical cysts and fistulae are to be considered as coming from the thyroglossal tract until proven otherwise.

In order to understand the pathology of the thyroglossal duct one must be familiar with those parts of the embryo which enter into its formation. In the human embryo the tongue arises not as an organ of the mouth but develops as a median elevation on the ventral wall of the pharynx and later grows forward into the buccal cavity. This projection, the tuberculum impar, forms eventually the anterior two-thirds of the tongue. The posterior third of the tongue arises from two lateral prominences which come from the ventral ends of the second branchial arch. These posterior lobes are first separated from the anterior portion by a V-shaped groove. From the apex of this V a pouch-like depression develops and later thickens into a lobed mass of cells, which elongates to form a stalked vesicle, connected with the dorsum of the tongue at a point which persists into adult life as the foramen cecum.

The thyroid gland, thus formed in its development, descends in the tissues of the neck and takes its adult position on the ventral surface of the trachea. By the time this migration is completed the stalk of the vesicle has normally become obliterated and disappears. In the normal human embryo this process is completed by the fifth week of fetal life.

About this time the mesoblastic cells of the segment, which is later to form the hyoid bone, begin to develop and cartilage cells make their appearance. In a certain proportion of cases (Mayo states that it is as high as 40 per cent) there is a delay in the descent of the thyroid, so that it becomes entangled in the mesoblastic cells which are developing the hyoid bone. From this circumstance arise certain developmental anomalies.

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* Read before the Meeting of North Pacific Surgical Association, Tacoma, Wash., Dec. 12, 1922.

These consist either in the failure of the descent of all or portions of the thyroid, giving rise to the so-called accessory thyroids, or to the failure of the stalk to obliterate, causing the persistent thyroglossal duct, or the canal of His. It is readily seen, therefore, why a complicated course exists, if the stalk of the thyroid bud fails to obliterate either in whole or in part. The tract would pass from the foramen cecum on the posterior part of the tongue caudally and somewhat ventrally to the midline of the neck, thru the body of the hyoid bone, then along the ventral surface of the upper part of the trachea to the isthmus of the thyroid. This course explains the difficulty which is usually encountered in the surgical removal of lesions developing in this structure.

The persistent thyroglossal duct is lined by one or more layers of epithelium, which are generally ciliated unless these structures have been destroyed by repeated infections. In the walls of the duct occur numerous mucous glands of a simple type. Their secretion gives rise to the discharging fistulae which so often makes this condition of special interest.

Another phenomenon is the persistence of islands of thyroid tissue along the course of the duct. These may occur at any point from the foramen cecum downward. They are prone to occur where the thyroid gland in its normal position is incompletely developed. While persistence of the entire tract occurs, much commoner are lesions involving isolated portions of the tract. Furthermore, observation has shown that there exist certain points of election, at which the majority of these lesions occur.

It has been seen that in the descent of the thyroid duct its stalk comes into intimate association with the mesoblastic structure forming the hyoid bone. The hyoid then forms a point of division. Lesions developing from the portion of the tract extending from the foramen cecum to the hyoid constitute the suprahyoid group, while those coming from the portion below the bone form the infrahyoid group.

Fig. 1 (after Chemin) shows these sites of election, three associated with the suprahyoid portion and two with the infrahyoid.

There are three classes of lesions associated with the thyroglossal tract: (1) solid tumors, (2) thyroid rests and (3) cysts. With the first two this paper is not concerned. Cysts are the lesions which most commonly result from a persistence of the whole or a portion of the duct. Often, when the patient is first seen by the surgeon, he presents a sinus, but this has always been preceded by a cyst which has either ruptured spontaneously or has been opened under a mistaken diagnosis.

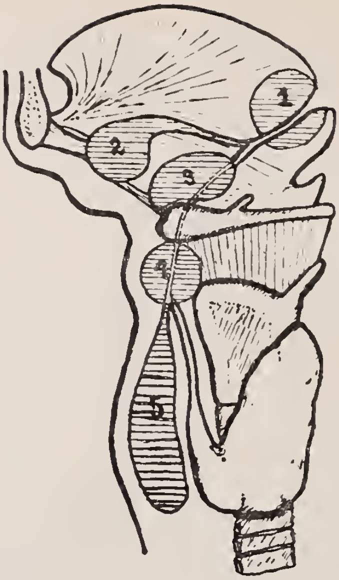

Fig. 1. Indicates points of election of lesions of abnormally developed thyroid (Schematic).

The essential structure of these cysts is quite constant. When no inflammatory changes have taken place, the walls are thin and transparent, consist of consecutive layers of connective tissue, lined with epithelium which is columnar and often ciliated. There are numerous mucous glands which secrete a viscid, faintly turbid fluid.

Where inflammatory changes have taken place, the walls are thickened, the glands distorted, the epithelial lining modified or destroyed and the contents changed to thick turbid mucus or pus. Cysts frequently become infected "spontaneously," that is, by the hematogenous route or by extension from the mucosa of the nosopharynx.

Thyroglossal cysts are always in the midline, anywhere from the base of the tongue to the level of the thyroid, differing in this respect from lesions resulting from persistent branchial clefts which are always lateral. Their time of appearance also distinguishes these lesions. Branchial fistulae are always present at birth, while thyroglossal cysts always appear later and may not develop until adult life.

When a thyroglossal cyst ruptures spontaneously or is opened by a physician, a discharging fistula always remains. The sinus is always in or very near the midline of the neck and may be at any level, depending on the distance downward to which the cyst has extended. These lesions are to be distinguished from branchial fistulae on the one hand and from sebaceous cysts, abscesses and broken down tuberculous glands on the other. If one keeps in mind the location and the time and manner of development, the differential diagnosis should not be difficult.

The persistent thyroglossal duct as it is encountered clinically consists of the frankly cystic or patent portion and then, attached to its upper extremity, is a fine thread-like structure which looks like a fibrous cord and which usually penetrates the center of the hyoid bone and loses itself in the muscles of the base of the tongue. Unfortunately this structure, which looks like a fibrous cord, usually contains a minute lumen, the lining of which is capable of regeneration. The permanent cure of this condition, therefore, demands the complete dissection of the cyst or fistula, together with all the tissues along the entire length of the original tract, including the central portion of the hyoid bone. Nothing less can assure a permanent cure.

So far as the writer has been able to learn, this radical procedure was first recommended by Eliot, of New York, in 1908.

Spencer, of London, in 1914 reported the resection of the center of the hyoid bone for the cure of a thyroglossal fistula. But the generality of surgeons did not recognize the importance of this procedure until in the last few years. The papers emanating from the Mayo Clinic have popularized the method.

The operation is performed in the following manner. A transverse incision is made across the midline of the neck at the level of the hyoid bone. The skin and platysma are reflected up and down. The cyst or the fistulous tract is found in the fibrous tissue connecting the two sternohyoid muscles. This is dissected free up to the hyoid bone. At this point the tract usually passes thru the body of the bone. The muscle attachments are separated from the body of the hyoid and about one-eighth of an inch of the center of the bone is removed. Then, without any attempt to dissect out the duct, the tissues are cored out up to the under surface of the mucosa of the tongue, where the duct is clamped, ligated and divided. In doing this the location of the foramen cecum with relation to the hyoid bone must be borne in mind. It lies in the midline, backward and forty-five degrees upward from the superior edge of the body of the hyoid.

After the resection is completed the muscles are brought together in the midline in such a way that the cut surfaces of the hyoid are approximated. A small rubber drain is inserted and the skin closed with a subcuticular stitch.

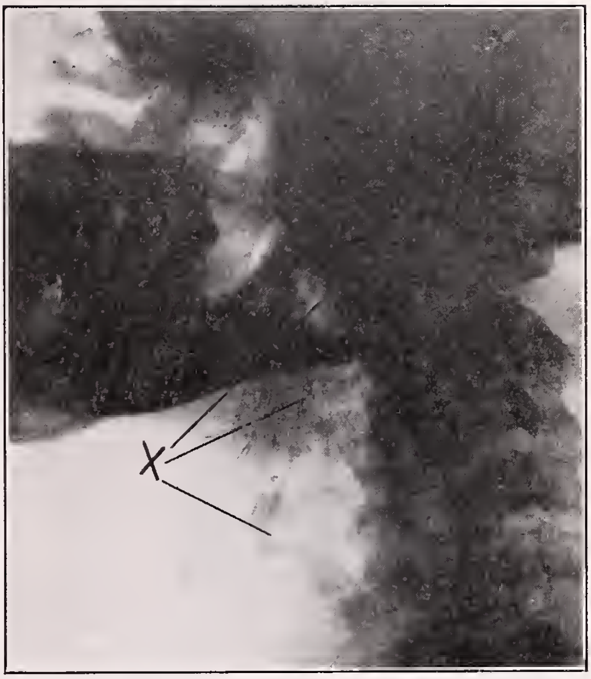

Fig. 2.—Lines converging at X indicates course of injected duct.

Mrs. H. J., married, 45 years of age, consulted me May 25, 1922 for a persistent sinus on the lower part of the neck.

At the age of 22 years she noticed a lump in the midline of the neck. It grew slowly and was painless. Eighteen years ago she had the first operation which was followed by a sinus. Since then she has had five operations, all unsuccessful.

In the midline of the neck, at the level of the cricoid cartilage, there is an irregular red adherent scar, with a center of raw granulation tissue. In this is a pin head-sized surface which on pressure from above exudes a drop of thick yellowish fluid. The sinus will admit a fine probe for about a quarter of an inch.

The tract was injected with a 20 per cent sodium bromide solution and a radiograph taken, which shows the outline of the tract, extending from the site of the scar up to the base of the tongue. The radiograph also shows the relation of the tract to the hyoid bone (fig. 2).

I have been unable to discover in the literature the report of the successful radiographing of a persistent thyroglossal duct. Several writers mention unsuccessful attempts to secure radiographs with the aid of silver solutions. One writer mentions an x-ray of a fine metal probe in the tract.

On June 6, 1922 the tract was dissected out under local anesthesia, using the procedure that has just been described (fig 3). The wound healed by primary union and the patient left the hospital on the fifth day. Up to the present there has been no evidence of a return of the fistula.

CONCLUSION

1. Lesions due to a persistence of the thyroglossal duct are not rare and must be considered when making a differential diagnosis of abnormal-

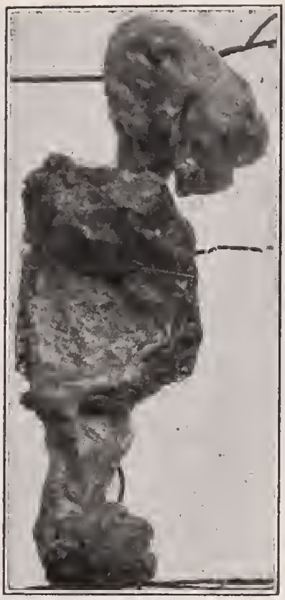

Fig. 3.—Specimen from dissection of injected tract.

ities, occurring in the midline of the neck.

2. Median cervical sinuses occur singly and appear at any time after birth up to adult age and they never close permanently.

3. Lesions resulting from a persistence of the thyroglossal duct in whole or in part can only be cured permanently by dissecting out all the tissues surrounding the entire tract, including the center of the hyoid bone.

POISONOUS MUSHROOMS

Mushrooms are growing in popularity as a food. The number of poisonous species is large, but there are probably only a half dozen or less that are really dangerous to life. Among these are the deadly amanitas. In the October issue ofHygeia Dr. Tieken describes these virulent varieties, the symptoms they produce and the treatment to be followed. For the first aid the most important measure is to empty the stomach and flush out the bowels with a salt enema; but send for a doctor at once. Dr. Tieken closes by quoting the following set of rules laid down by Dr. Farlow, of Harvard University, which, scrupulously observed, will prevent the eating of the most poisonius varieties of mushrooms:

1. Avoid fungi when in the bottom or unexpanded stage; also those in which the flesh has begun to decay, even if only slightly.
2. Avoid all fungi which have death cups, stalks with a swollen base surrounded by a sac-like or scaly envelop, especially if the gills are white.
3. Avoid fungi having a milky juice, unless the milk is reddish.
4. Avoid fungi in which the cap is thin in proportion to the gills, and in which the gills are nearly all of equal length, especially if the pileus is bright colored.
5. Avoid all tube-bearing fungi in which the flesh changes color when cut or broken or where the mouths of the tubes are reddish, and in the case of other tube-bearing fungi experiment with caution.
6. Fungi which have a sort of spider web of flocculent ring around the upper part of the stalk should in general be avoided.

THE LEGITIMATE ERROR IN DIAGNOSIS*

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The practice of medicine in the twentieth century has become one of the most complex and least fixed of all vocations. Facts have accumulated so rapidly in the last fifty years and our methods of practice have changed so decidedly, even in the last twenty-five years, that I fear we, as members of that profession, are in danger of entering a period comparable in history to that which followed the death of Hippocrates. You may remember that he, with his contemporaries, brought order out of chaos by nihilistic efforts against the prevailing mysterious conceptions of disease, its cause and treatment. He set his feet upon the ground and, with his back against the wall of facts, attempted to separate the things known from the thinks unknown. He took stock of the art and philosophy of medicine and introduced methods of observation, out of which came systematic study and correlation between the structure of disease and signs and symptoms.

After every great epoch there follows a period of overzealous enthusiasm, usually without a proper material basis, without the necessity of improvement and without the stage-setting which paves the way for fundamental discovery.

The last half of the nineteenth century was perhaps the greatest period in the history of medicine in so far as fundamental knowledge of disease is concerned. With it came greater microscopic, chemical, physical, electrical, photographic and surgical vision. With it our diagnostic methods and opportunities improved greatly; symptoms and signs are now not the only clinical methods of diagnosis. The value of examination of the tongue, color of the urine and presence of fever, while still of great importance, now share equally with many other methods.

It may be of interest for us to take stock and see just what our clinical diagnostic efficiency is. In doing this we may judge the means and methods by actual results found in a conservative, comparative analysis of clinical preoperative diagnostic summaries of patients' conditions with the actual pathologic findings at operation.

In a previous paper dealing with diagnostic efficiency I pointed out that there are three types of clinical diagnostic error recognizable:

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* Read before the Thirty-first Annual Meeting of Idaho State Medical Association, Idaho Falls, Ida., June 13-14, 1923.

1. *The actual or legitimate error* which consists of incorrect regional location of the disease; the finding of a pathologic condition which demands radically different operative, medical, dietary or hygienic treatment; or the finding of a condition which demands a different prognosis from that indicated clinically.

2. *The apparent error* which consists of a difference in terminology or the findings of a different pathologic condition which does not alter the treatment or prognosis indicated clinically.

3. *The avoided error* which consists of making preoperative diagnoses or summaries without positively specifying the pathologic condition, the therapeutic measures and the prognosis.

Every clinician who is honest with himself must recognize these three groups. Such a clinician realizes that there is a certain element of actual error, due to the fact that all pathologic conditions do not manifest themselves in pathognomonic symptoms and signs or other clinical tests; and that many different conditions frequently present the same clinical manifestations, and that some conditions, which do not present local manifestations, do present general, or systemic manifestations. These statements being true, every clinician soon learns that he cannot make the pathologic diagnosis in a certain percentage of patients suffering from disease.

In what percentage of cases does the clinician actually make an incorrect diagnosis which, if followed, would mean radically different treatment and prognosis from that indicated by the actual pathologic findings at operation?

	Per Cent	Number of Cases
Benign pathologic conditions in stomach	4	25
Malignant pathologic conditions in stomach	0	29
Malignant pathologic conditions in rectum	0	26
Benign pathologic conditions in uterus	0	138
Malignant pathologic conditions in uterus	0	13
Malignant pathologic conditions in breast	6.5	46
Malignant pathologic conditions in breast	5.5	2100
Benign pathologic conditions in breast	4.5	44
Benign pathologic conditions in breast	11.2	2100
Duodenal ulcer	9.7	83
All malignant conditions	2.5	168
All clinical diagnoses	9.9	1000
In all surgical patients (producing specimens)	2.65	
In all surgical patients (malignancy not even suspected)	.8	

In what percentage of cases does the clinician avoid making an error by failing to make a positive preoperative pathologic diagnosis?

	Per Cent	Number of Cases
Benign pathologic conditions in stomach	16	25
Malignant pathologic conditions in stomach	13.8	29
Malignant pathologic conditions in rectum	4	26
Benign pathologic conditions in rectum	0	
Benign pathologic conditions in uterus	35.6	138
Malignant pathologic conditions in uterus	77	13
Malignant pathologic conditions in breast	19.5	46
Malignant and benign pathologic conditions in breast	17.5	2100
Benign pathologic conditions in breast	54.5	44
All malignant conditions	27.3	168
All clinical diagnoses	36.7	1000
All clinical diagnoses	24.66	16000
All abdominal and pelvic cases	36.7	698

In what percentage of cases does the clinician make an apparent error in diagnosis?

All clinical surgical diagnosis, 4.5 per cent, 1000 cases.

These figures clearly indicate that the actual clinical diagnostic efficiency in a certain important group of conditions, in which diagnostic efficiency can be checked at operation, is sufficiently great to demand methods of prevention.

The checking can be done by two methods: (1) by exploratory operation by a competent surgeon, directed by regional or organic diagnosis (provided the patient is generally fit to stand such exploration), and (2) by combined gross and microscopic study of the condition found at and during exploration.

Some one must correct the 4 per cent, 6.5 per cent, 5.5 per cent, 4.5 per cent, 11.2 per cent, 9.7 per cent, 2.5 per cent, 9.9 per cent, 2.65 per cent and 0.8 per cent (see list of actual errors) and someone must decide in 16 per cent, 13.8 per cent, 4 per cent, 35 per cent 77 per cent, 19.5 per cent, 17.5 per cent, 54.5 per cent, 27.3 per cent, 36.7 per cent, 24.66 per cent and 36.7 per cent (see list of avoided errors).

Who is going to correct the clinician's actual errors and who is going to decide the correct diagnosis when he avoids making a diagnostic error? These are very practical questions which involve the welfare of the patient and the efficiency of the medical profession.

In the series of cases studied in this presentation all of these actual and avoided errors were checked at the time of operation. In no case did the clinician's diagnosis do anything more than point the way for more detailed observations (operative exploration and microscopic examination) of the actual conditions.

These methods of detailed closer opservation were left to the surgeon and his associated clinical pathologist, just as any clinician might refer a case to a roentgenologist, cystocopist, nost and throat specialist or a neurologist. He refers it, with his own clinical observations, to those who possess certain methods with which he is not expert or, if expert, has no time or desire to utilize personally. He refers them to the surgeon, skilled in, and prepared to do, surgical explorations.

The question now arises: Can the surgeon correct all of the actual errors or decide in all of the avoided errors?

It is the answer to this question which shall decide whether or not there is a necessity for a new type of specialist in the medical profession. Personally, I am opposed to so many specialties which represent to me not so much breadth in the actual knowledge of medicine but rather the lack of desire and patience on the part of young members of our profession to spend time enough to learn the facts about disease; and I am also opposed to the expending of too much time on things in medicine which are of little practical value in practice; altho they may be of great value in medical research or teaching.

Let us grant—despite the fact that it is not true—that a surgeon's gross diagnostic ability is just as great as that of the expert (who has spent his life studying morbid anatomic conditions, grossly and microscopically), and study some figures relative to gross diagnosis in the hands of the expert.

In the following chart may be seen the percentage of absolutely necessary microscopic diagnoses in a series of 12,964 specimens from 24,368 surgical operations:

Hospital A (General Surgery)	Specimens	Diagnosis possible only with a microscope	Per Cent
Breast	289	18	(6.2)
Extremities	118	20	(16.0)
Gallbladder	1,086	0	
Genitourinary organs	486	33	(6.7)
Head	33	17	(51.0)
Intestines	249	32	(12.0)
Lip and glands	44	6	(13.0)
Neck	259	54	(20.0)
Stomach	191	61	(31.0)
Thyroid	1,638	4	
Trunk	153	31	(20.0)
Uterus (portion)	165	11	(6.0)
Uterus (entire)	655	21	(3.0)
Tubes	625	4	
Ovaries	601	5	
Parovarian cysts	75	0	
Specimens for diagnosis	432	207	(47.0)
Hospital B (General Surgery)			
General specimens	2,635	461	(21.0)
Hospital C (Eye, Nose, and Throat)			
Diagnostic specimens	461	432	(93.0)
Clinical Offices			
Diagnostic specimens	586	558	(95.0)

In this series there are 2,642 specimens from ten different organs or regions (breast, extremities, genitourinary organs, head, intestines, lip and glands, neck, stomach, trunk, and uterus) in which it was i neck, stomach, trunk, and uterus) in which it was impossible to make the gross diagnosis in 16.8 per cent, which is practically one in five or six specimens.

Even this figure does not represent actual gross diagnostic ability, because it does not include the conditions in which the clinician recognizes his diagnostic inability and has a small specimen removed for microscopic examination. In this series the clinician removed 990 (1.3 per cent of 60,645 registered patients) of which 94 per cent of necessity required microscopic diagnosis.

It must not be forgotten in the study of these figures that an expert morbid anatomist might have greater clinical diagnostic efficiency than the clinician who is expert only in reading signs and symptoms. Some of our greatest clinical diagnosticians have been those who have spent a long apprenticeship in morbid anatomy. Some of the questionable clinical diagnoses, in this series, might have been correct positive diagnoses, if the clinicians who made them had had a longer experience in the actual correlation of clinical pictures with actual morbid anatomic conditions (as they exist at operation and not at autopsy) and could read prognosis in pathologic variation of structure.

In view of these facts as presented here, in figures drawn from actual experience under most favorable diagnostic conditions, it may be logically concluded that:

1. There is an actual clinical diagnostic error which is much greater than we are ordinarily prone to admit.

2. There is an appreciable increasing tendency among conscientious clinicians to recognize the limitations of clinical diagnostic methods based on signs and symptoms.

3. There is a necessity for a specialist (a pathologist in the original sense of the word) well trained in morbid anatomy, gross and microscopic, and its clinical significance of the purpose of clinical and surgical consultation.

4. Long apprenticeship in morbid anatomy, such as can be obtained only in association with surgery, is of great value in clinical diagnosis and is absolutely necessary, if a high degree of efficiency is desired.

5. The necessity for properly trained gross and micropathologists is increasing as the public becomes better educated. The lesions of the body are seen to be smaller and more frequently without the old clinical gross diagnostic signs and symptoms.

6. A legitimate error is one that cannot be avoided but a very high percentage of all clinical diagnostic errors which have been thought to be legitimate can be avoided by the proper utilization of gross and microscopic experience obtained at operative exploration.

7. Knowledge of morbid anatomic conditions obtained at autopsy and that obtained at operation are two different things. One is the complicated end-result of disease, and the other is disease in the process. One sometimes affects the end stages in future patients and the other the early stages (stages when treatment is available) in patients still alive. Experience in one makes clinicians and experience in the other makes anatomists.

INFECTION OF THE ANTRUM OF HIGHMORE*

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The maxillary antrum is a triangular, box-like cavity, with its only natural opening located near the top of the rim of the box. It is so situated that any infection of the superior nasal cavities easily finds its way into the antrum. The most usual mode of entrance of infection probably takes place through the normal ostium of the antrum in the middle meatus. Another common entrance is by infection from diseased roots of teeth, usually the last bicuspid or first molar. Abscesses at the roots of these teeth easily migrate thru and into the antrum.

So in etiology it can be said that it is nearly always a secondary infection, starting somewhere else, except in the rare traumatic cases from external violence. Among predisposing causes may be mentioned the malformations or deflection of the nasal septum and hypertrophic and cystic middle turbinates which usually go together.

These conditions interfere with the normal aeration and drainage of those sinuses which have their outlet in the middle meatus. This interference in normal function produces a more or less chronic catarrhal condition of the mucous membrane lining these cells, lowering their resistance to infection.

The frontal sinuses or ethmoids are usually affected first. It may be said that at least seventy-five per cent of infections of the frontal sinuses are followed by infections of the maxillary antrum. This is easily due to their respective locations, the drainage from the frontal sinus coming down usually in the infundibulum, behind the uncinate process, just as above the ostium into the antrum. In the upright position drainage from the frontal sinus would naturally drop right into the antrum.

But here again nature has defensive forces on guard. According to the histologic anatomy of the mucous membrane lining the antrum of highmore, there are delicate hair-like cilia in the superficial layer, which when stimulated have a wave-like motion which tends to expel from the antrum any intruding organism. But constant or repeated catarrhal infections soon break down the resistance of this protective barrier. Once there is an empyema of the antrum, it is very likely to become a more or less chronic condition, without operative treatment.

The diagnosis of disease of the maxillary antrum is sometimes easy, and sometimes very difficult to be certain of. In acute inflammatory infections it is frequently almost impossible to make a positive diagnosis, whereas in an empyema it is usually easy.

The patient may complain of various pains in almost any part of the head, the back of the head and neck, top of the head, or even in the parietal region, but usually about the eye, back or beneath the eye. The pain is in the nature of just a dull ache.

He may complain of a feeling of fullness or obstruction in the ears or of losing his hearing. He may have various symptoms of an obscure focal infection. The patient may have a bad breath, and in some cases of empyema the odor that the rhinologist has to face in examining and treating these cases is about the most disagreeable that he encounters in his practice. The characteristic odor of chronic empyema is made manifest by the use of suction, whereas without its use it may not be noticeable. The same is true of the observation of the purulent discharge which is drawn into the middle meatus with suction.

One of the prominent symptoms complained of by the patient is that he has a bad cold in the head that does not get well. In empyema he has a chronic discharge from the head. He will say it goes down the back of the throat or he has to keep blowing the nose and may use six or eight handkerchiefs a day. He may complain of a more or less constant bad taste in the mouth and he frequently has a coated tongue.

Inspection reveals usually considerable inflammation and swelling over the uncinate process and a mucopurulent discharge in the middle meatus, coming from the region of the infundibulum. The discharge may be noticed adhering to the posterior wall of the oropharynx. The posterior palatal pillar is usually swollen and inflamed. Frequently polypi are noticed arising in the region of the infundibulum.

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* Read before Walla Walla Valley Medical Society, Walla Walla, Wash., Dec. 14, 1922.

But these objective symptoms may be caused by disease of the frontal sinuses or anterior ethmoids. The frontal sinuses are usually easily eliminated by the location of pain and the sensitiveness to pressure on the inferior wall of the frontal sinus within the orbit. Disease of the anterior ethmoids is also manifest by pressure over the ethmoid region within the orbit.

Transillumination and the x-ray are also valuable aids in our diagnosis, but these even are sometimes both misleading and inaccurate, giving us dark areas and false shadows due to position and to irregularities and variations in thickness of the sinus walls. A thickened hyperlastic mucous membrane lining the antrum, which is the remains of a former active infection, may give us a false shadow.

The most certain diagnosis of an empyema of the maxillary antrum is obtained by puncturing the antronasal wall thru the inferior meatus beneath the inferior turbinate, with one of the various antrum irrigating trocars, and washing out the antrum. In most cases, if the puncture is done properly and in the correct place, the irrigation will bring away any purulent secretion that is in the antrum, in which case there is no question about the diagnosis.

Sometimes this procedure might fail to confirm a diagnosis, where pus is present in the antrum. The operator might pass the trocar at too much of an angle or too high, where the bony partition is thinnest and most easily penetrated, and the end of the trocar and irrigator emerge near the top of the antrum or in close proximity to the ostium of the antrum, and the irrigating fluid pass immediately out thru the normal opening at the top of the antrum, instead of washing from the bottom and up thru and around within the antrum. Also Skillern reports failure with irrigation in a case of empyema of the antrum, in which a large polypus in the antrum acted as a ball and socket valve, when attempts at irrigation were made.

While this is considered a comparatively harmless little operation by most operators and usually an infallible diagnostic procedure, there are reports of very verious results in the literature. In a lengthy article by Reidar Gordon, in *Annals of Otology, Rhinology and Laryngology*, on the "Serious Complications in the Puncture of the Maxmillary Antrum," he mentions having found record of nine cases, in which serious results accompanied puncture of the antrum, of which four resulted in death. He also describes in detail seven cases in his own practice and that of his colleagues, two of which resulted in death. Beside death the serious complications were prolonged periods of unconsciousness, convulsions and paralysis following. He ascribes among the principal causes nasal-reflex neurosis, air embolism and cocain poisoning.

Treatment is either palliative or operative. In acute cases it is of course always palliative. Rest and elimination, locally shrinking the mucous membranes of the middle meatus, suction and bland oil sprays.

After the case has become chronic, or if the patient does not apply for relief until it has become chronic, palliative measures may be tried for a while before resorting to operative treatment. In many cases suction will produce an apparent symptomatic cure or at least reduce it to a quiescent stage. In using suction treatment I prefer the Coffin suction apparatus to any other I have ever seen. In using this instrument we not only get the suction effect, but suction and compression alternating.

The suction is turned on until the gauge registers from five to ten pounds vacuum pressure, which varies with what the individual patient can stand, then the valve is switched to pressure which is connected with some antiseptic neubulizing medicament, which is not only thrown into the nares, but is supposed to be drawn into the sinuses by the immediately previous vacuum effect of the suction. It is this quickly alternating vacuum and pressure effect that I think is far superior to the ordinary simple suction effect. The increased hyperemia and circulation in the diseased tissues alone even is a help to nature in overcoming the infection.

Suction treatment, to get best results, should be given daily. With this apparatus Coffin at one time made use of a culture of the Bulgarian bacillus in the nebulizing compartment to throw into the sinuses. But, as it is hard to keep a fresh culture of Bulgarian bacillus on hand, I usually use the oily preparation, liquid iodex. Suction treatment is sometimes good treatment in chronic cases as well as in the acute and subacute.

Vaccines I have frequently tried, both stock and autogenous, without getting any more results than what I believe would be naturally produced by the ordinary defensive immunity of the disease itself.

Only in chronic cases should operative measures be considered. In taking up the operative treatment, the first and simplest procedure should be the use of irrigation with the irrigating trocar thru the nasoantral wall beneath the inferior turbinate. Sometimes a few irrigations will effect more or less of a cure. If not, the usual next procedure is the operation of making a fairly large opening into the lower part of the antrum by removing a section of the nasoantral wall in the inferior meatus, beneath the inferior turbinate. In doing this the mucous membrane of the nasal wall in the inferior meatus should be preserved and turned into the antral opening after the ridge between the antrum and inferior meatus has been thoroly removed. This prevents the opening from immediately closing and gives good permanent drainage from the antrum and better chance for treatment. In this operation the inferior turbinate or as much of it as possible should be preserved.

In severe cases and old chronic cases of long standing this operation will not always effect a cure without thoro curetting and removal of all granulation tissue and polypi from all read angles within the antrum, which cannot be reached without a more radical operation. There are several which will accomplish the desired end. The Canefield, the Caldwell-Luc, the Denker and the Beck operation each has its advocates in radical surgery.

The Canefield operation is usually done with local anesthesia, and consists in the resection of the anteroinferior angle of the apertura pyriformis, extended to include the nasoantral wall. This removes the front acute angle of the antrum and gives a fair view into its interior.

The Caldwell-Luc is a more extensive operation and consists of removal of the anterior wall of the antrum, working thru an incision from within the mouth just at the union of the labial and gingival mucous membranes. This operation gives a perfectly clear field to the entire antrum.

The Denker operation is more or less of a combination of the Caldwell-Luc and Canfield, while the Beck operation is simply a greater and more extensive removal of the anterior wall of the antrum. The three latter operations are usually done under general anesthesia. The two latter, it seems to me, are unnecessarily mutilating. The old operation of drilling an opening thru a tooth socket for drainage and treatment of an antrum is obsolete and no longer considered good surgery.

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MELANOSARCOMA OF THE CHOROID, WITH REPORT OF A CASE. *

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The following case is, in my opinion, of sufficient interest to justify report and discussion:

P. A. L., a white male, age 41, farmer, of German decent, was first admitted to hospital on March 5, 1923, complaining of severe pain in right eye which had lasted for about a week. He was a man of robust appearance, weight 170 pounds, height 5 feet 10 inches, no recent loss of weight. His father is living, age 71, and is in good health. Mother died at age 56, while undergoing an operation for cancer of the breast. The patient has seven brothers and two sisters living, all in good health. One sister died in infancy. One of his brothers, age 48, is blind in his right eye, and his mother, the patient says, was blind in one eye for several years before her death, but I am unable to get a definite history concerning the duration or cause of the blindness of either case. All grandparents lived to a ripe old age.

Patient had typhoid fever at eleven years of age; had pneumonia the following year, and when sixteen years old, had malaria, lasting three years. He has had external piles since he was fourteen. Otherwise no illness until present eye trouble came on.

During the summer of 1914, in attempting to sight a rifle, he first noticed that central vision of right eye was defective. However, no attempt was made to have the eye examined or to have the vision improved until November, 1918, when he was examined by my present colleague, Dr. R. L. Nourse, who noted a large detachment of the retina involving the upper temporal third and covering half of the optic disc. He was unable at that time to elicit a history of any sort of injury at any time during patient's life. When examined in 1918 patient's visual field showed blindness in the inferior nasal, nasal, and most of the superior nasal fields, corresponding to the location of the retinal detachment. Subsequent to 1918 the curtain of blindness slowly covered the entire field of vision, total blindness coming on during the fall of 1922.

Prior to one week before admission there had been no pain, no redness, no irritation or uncomfortable sensations in or around the eye. But during the night of February 26, 1923, the eye suddenly became painful and red, and on the following morning his wife noticed that the right pupil was much larger than the left. The pain gradually increased in intensity, radiating to right temple, until it became unbearable and he sought relief.

At the time of admission the right eye was deeply injected. The pupil was dilated to maximum. The interior chamber was practically obliterated. The cornea and lens slightly clouded. Tension increased to stony hardness. Details of fundus not made out except what I took to be a total detachment of the retina. The Wassermann (blood) reaction was negative, and the heart, lungs, kidneys, gastrointestinal tract, and nervous system were all normal.

A broad iridectomy was done the next morning, which completely relieved his pain. He left the hospital six days after operation, entirely comfortable, but there was still considerable redness of the eye. He remained free of pain until March 23, seventeen days, when the pain suddenly set in again and two days later he returned to hospital with the eye in much the same condition as when I first saw him. Immediate enucleation was advised and consented to. The eye was enucleated on March 26,

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under ether anesthesia; the optic nerve was severed well back of insertion into the globe, and the recti muscles approximated with plain catgut. Convalescence was uneventful. Left the hospital on March 30 and went home three days later, the socket healed and clean. There was no pain following the enucleation except an occasional twinge, which he located in the back of his head. So far as I was able to determine there was no indication of metastasis.

Pathologist's report: "A dark colored tumor mass, 5 to 6 mm. in diameter, springing from choroid some 5 mm. above and temporalward from optic nerve-head. The retina was detached completely thruout posterior half of globe. On section the tumor showed one mass of cells, practically without stroma, with dark and yellowish brow clumps of pigment scattered between."

It is not claimed that this is an unusual eye condition, for Fuchs says that "of malignant tumors the one chiefly occurring in the choroid is sarcoma, which in most cases is pigmented (melanosarcoma);" However, there are sufficient points of interest in this case, in my opinion, to justify its report and discussion.

As Fuchs says, the clinical symptoms that sarcoma of the choroid presents change so during the development of the tumor that four stages can be distinguished in the course of the disease: the first or quiet stage, the second or stage of increased tension, the third stage characterized by extension thru the wall of the eyeball, and the fourth stage characterized by metastasis.

In the first place it must be noted, in studying this case, that the first or quiet stage of this tumor growth, the time from its beginning to the occurrence of increased tension, is unusually long, at least nine years. According to de Schweinitz the first stage usually lasts from six to twelve months, but rarely may be prolonged to five years. Fuchs says the first and second stages last a long time—no definite figures given. Weeks gives the duration of the first stage at from a few months to a few years. Findlay, in the American Encyclopedia of Ophthalmology, states that the first stage commonly lasts from six months,to a year, but may extend over several years. It is reasonable to infer, therefore, that it is uncommon for the first or quiescent stage of sarcoma of the choroid to last over a year or two, five years at most. As stated above, the first stage in this case lasted at least nine years.

The second and most important point in the discussion of this case has to do with the clinical diagnosis. When this man was first seen by me, the eye presented all the classical symptoms of an inflammatory glaucoma, and I am frank to admit that the presence of an intraocular tumor was not suspected until the next day at the time the iridectomy was done. Before operating I transilluminated the eye and, as I got no light reflex from any portion of the globe, it began to dawn upon me that we might likely be dealing with some form of intraocular growth or mass.

My experience with intraocular tumors has not been extensive, but looking back over the history of this case I am surprised and chagrined to think that I did not recognize this condition at once. The gradual reduction of his visual field, the ultimate total blindness, the fact that detachment of the retina was diagnosed in 1918, the sudden onset of inflammatory glaucoma, and the lack of light reflex on transillumination, all definitely point to the presence of an intraocular growth. Apparently there was no reason for missing it, but I did. Fuchs very kindly says, however, that "since the picture presented by the affected eye corresponds completely to the complex of symptoms of inflammatory glaucoma, the correct diagnosis in this stage is to be made with difficulty or not at all."

The family history in this case is also interesting. His mother died at 56 on the operating table while undergoing an operation for breast cancer. For some years before her death she had been blind in one eye. Whether the blind eye has any clinical relation to the cancer of the breast will probably never be known. I wish you could tell me. Then, again, a brother of the patient's is also blind in one eye. It would be extremely interesting to have more definite knowledge concerning these two blind eyes.

The Influence of Heredity on the Occurrence of Cancer

The coincident development of the sciences of genetics and experimental cancer research, according to H. Gideon Wells, Chicago, (Journal A. M. A., Sept. 22, 1923), has begun to yield evidence bearing on the relation of hereditary influences to cancer occurrence. Human statistical evidence is not of sufficient accuracy or extent to render it of any value in the study of this subject. The occurrence of cancer families is unquestionable but of doubtful value because of the possibility that such occurrences may depend solely on chance. Family occurrence of rare neoplasms, such as glioma of the retina, multiple neurofibromatosis, and multiple cartilagenous exostoses, cannot be dismissed as depending on chance. Human evidence being inadequate, we are compelled to rely on evidence from observations on animals. It is known that the principles of inheritance are the same in all species of animals as well as in plants, and that cancer, in its fundamental respects, is the same in man as in other mammals; therefore the drawing of conclusions in respect to heredity and human cancer from observations on experimental animals is justifiable.

AUTOGENOUS SERUM TREATMENT OF NEISSERIAN OPHTHALMIA AFTER BARRAGE DOSES OF VACCINE

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There has been little added to the treatment of gonnorheal infection of the eyes in the past twenty-five years that justifies any definite assurance of good results in any case. The general statistics following this infection show blindness in over 90 per cent. The normal course of the infection with present applied therapy covers so long a time that the corneal cuboidal mucous membrane is irreparably damaged, and followed invariably by scar tissue and opacity or loss of entire eye ball. The ultimate degree of vision is dependent upon the final result to the cornea.

CASE REPORT

Young professional man of 31 years, with a negative past history in so far as a Neisserian infection or lues is concerned. General health apparently is first class condition. Seen for the first time on the second day of an acute conjunctivitis in one eye. The left eye showed considerable edema of the lids, a beginning edema of the bulbar mucous membrane and a profuse mucoid discharge with little pus.

He was placed upon mild irrigations with boric acid and instillations of argyrol and cold compresses. The seocnd day there was no improvement, the eye being much worse. Smears from the discharge showed a gram negative intracellular diplococcus, three different laboratories giving the same report. Cultures were negative. The negative cultures precluded the consideration of the diplococcus of meningitis which morphologically resembles the gonococcus.

He was taken to hospital and under constant attention the regulation treatment by irrigations and silver preparations was instituted. With this he was given what I have named barrage of doses of stock mixed Neisserian vaccine. On the seventh day, in spite of prophylaxis, the other eye was involved, starting with an edema of the conjunctiva of the lower cul-de-sac, including the bulbar mucous membrane, associated with a copious mucoid discharge. On the eighth day the outer canthus of the first eye was lanced to allow better irrigation and drainage, so intense was the edema of both lids.

An incident took place at this time upon which the serologic treatment got its inception. The rapidly increasing edema of the second eye called for an incision of the outer canthus on the tenth day, the third since its beginning. The clinical picture on this day presented both eyes terrifically swelled, the bulbar conjunctiva intensely injected and edematous. The edema was so intense that the mucous membrane of the balls rolled over both corneae. The second cornea was slightly hazy and the first apparently shot beyond repair, being covered in great part by granulations.

The rapid change for the better, after institution of the serum treatment together with the bacteriologic changes, could not be attributed to the mere lancing of the canthi. On the tenth day the second eye called for an incision of the outer canthus. The outlook at this time was very grave. The first eye was irreparably damaged and the second was going the same route more rapidly.

The incident upon which the serum treatment was developed took place after the lancing of the first canthus. A persisting mild hemorrhage from a small artery caused a flow of blood thru the conjunctival sacs for about one hour. This was finally stopped by ligature. The character and volume of the discharge for a number of hours after this was noticeably changed for the better. This change lasted not more than twelve hours. The next day there was a resumption of the prelanced stage. Grasping at any change in treatment to prevent total blindness, the serum treatment was applied to the eye which was irreparably damaged and which could not be damaged further by a trial treatment. This was applied on the ninth day. Fifty to sixty centimeters of blood of patient was taken, this allowed to clot, after which the serum was taken off and centrifuged to get a perfectly clear serum free from cells. Five to six drops of this was instilled into the eye every fifteen to twenty minutes, day and night. The silver treatment was not interrupted, but the irrigations were discontinued.

Before twenty-four hours passed, there was an undisputed clinical improvement in the character of the discharge. The quantity was greatly reduced and practically all subjective symptoms disappeared. The serum, to use the patient's words, acted "like oil to a dry fliver cylinder". His further comment was that it was the only thing that had been done which gave him the first relief from almost constant discomfort.

The rapid and absolute change for the better left little question of doubt in the efficacy of the serum in this case. The next day the outer canthus of the second eye was lanced and the serum treatment was applied as to the first eye, with an identical prompt response. This serum treatment was continued until there was no question of a possible recurrence, and for its soothing effect.

At the end of seventy-two hours after the institution of the treatment in the first eye all smears were negative and have remained so for both eyes. He left the hospital after eight days of serum treatment. The last four or five days the treatments were gradually reduced to longer periods of time. For about one week after leaving the hospital the serum was applied at long intervals for its soothing action.

During the entire course of this treatment it was necessary to puncture a vein and withdraw blood for its serum as often as was needed to keep a constant supply on hand. The exact number of times was not recorded. The total number did not exceed eight. Fifty to sixty cubic centimeters would give a sufficient amount of serum to last twenty-four hours when used intensively, in the beginning of treatment. This is kept at ordinary room temperature.

The barrage doses of Neisserian vaccine given in the first six days consisted of two cubic centimeters of a stock mixed vaccine, at forty-eight hour intervals. I use the term barrage to distinguish from the regulation small dose given at one point of injection. The two cubic centimeters are split into four parts, injecting each part at a distant point. A single large dose of two cubic centimeters at one point would produce a violent local reaction with a possible abscess, whereas the divided distribution seemed to produce little local or general reaction.

There is no question that the use of this vaccine produces antibodies against the diplococcus. The failure to clean up local infections by its use lies in the fact that the infection is a surface one and does not get into intimate contact with the serum. Its good effect in arthritis apparently lies in the fact of antiseral antibodies coming in intimate contact in the tissues with the bacterium. The large doses given in this case were used in the hope of having some good effect in a serious infection. There was apparently little direct response to its use, in so far as the local eye infection was concerned.

Many interesting questions suggest themselves in this case study. Would normal serum have the same effect as the autogenous serum used in this case. After the massive vaccine doses there must be a high amboceptor content developed from the antigenic properties of the vaccine which, according to Ehrlich's theory of hemolysis or bacteriolysis, completes a perfect trinity—the union of complement, amboceptor and bacterium, followed by a prompt inactivation of the living virus, its destruction and a resolution of the effects of the infection. The earlier this can be applied the sooner the entire cure takes place.

While this is a report of but one case, the principles involved are such that direct experimental work along these lines may develop a specific stock serum for an affection which contributes no small percentage to blindness, especially in babes.

NATIONAL CANCER WEEK

The annual cancer week has become an established institution, under the supervision of The American Society for the Control of Cancer. Hitherto a certain week has been designated thruout all parts of the country, when this subject has been brought intensively before the attention of the public. This year the plan has been changed, so that instead of a single national cancer week, there will be a series of six cancer campaigns, one month being devoted to the subject in each of the six regions of the United States and Canada.

The first campaign occurs in the Northwest, including Oregon, Washington and Idaho. Dr. Ernest F. Tucker, of Portland, is the Regional Director for this section. Each county has a physician who, as County Chairman, supervises the campaign in his county. The purpose is to devote the first three weeks of the month to preliminary preparation, while the fourth week will be employed for public meetings, with addresses and other features which are aimed to have educational influence upon the people of a given city or locality. The details of the campaign are to be worked out by the local committee, differing somewhat in each locality, according to the conditions or plans of the individual community. For this Northwest section the campaign begins October 15. Since all members of the profession are interested in disseminating facts about cancer, they will naturally be expected to aid in their local cancer campaign in an effort to bring the truth regarding cancer to the attention of the public, with the hope that the disease may thus receive earlier recognition and be subject to established effective treatment at a time when there may be reasonable hope for recovery of the affected individual.

Dr. Charles P. Childe, President of the British Columbia Medical Association, in his recent President's annual address, stated the cancer problem clearly and forcefully, emphasizing the public's obligation to furnish the financial means to bring the facts before the people. Among other things he says:

"The humiliating confession must be made that we know very little about cancer. Of the nature of the environment favoring its activities we are in complete ignorance. It is neither foul air nor fresh air, neither hardship nor indulgence, neither poverty nor riches. The only things we know about it which are worth knowing are its age incidence, its relation to chronc irritation and the fact that it is, in its beginnings, a local disease and that therefore it can be cured by early removal in those situations where removal is possible.

"This is practically all we know about cancer. I wish to make only two comments. The first is that this knowledge is not enough. In an age which has yielded the secrets of so many diseases it is a point of honor with the medical profession not to rest content till this pressing problem has been solved. With the public it is not only an obligation but, from the point of view of their own interest and safety, a vital necessity to furnish the financial means of solution, and to see that research is not crippled or stinted by any niggardly parsimony.

"The second comment I make is this: The most important fact we know about the disease is that in its beginning it is local, and that its course is a centrifugal spread from its local point of origin. Is that knowledge anythng like as productive as it might be? Undoubtedly it is not. . . . . Without resort to any sensationalism some obvious steps could be taken to spread the knowledge of a few very simple facts about cancer. This would give by no means unwarranted ray of hope to the public and would enable some of the victims of this terrible disease to apply in time to have, at all events, a chance of cure or freedom from recurrence, whichever you like to call it."

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Montana
Devoted to the interests of the Medical Profession of the Pacific Northwest

Editorial Office, 323 Cobb Building, Seattle, Wash.

October, 1923

EDITORIAL

HEALTH EXAMINATIONS

The campaign for health examinations, inaugurated this year by the National Health Council, is one of the greatest public health movements that is being carried on at the present time. The slogan, "Have a health examination on your birthday", has already reached most every community in the United States and people are thinking in terms of posiitve health more than ever before. In many cities and towns large committees are at work teaching the value of periodic health examinations with the result that physicians are being called upon to make much more frequently the painstaking examinations required. To meet the public demand for health examinations each physician should be prepared to give every case the extensive examination that the public are being taught to expect. Too often in the past examinations of persons apparently well, have been far from complete, with the result that important defects have been overlooked. Such examinations must cease, if the profession wishes to avoid just criticism from an informed public.

The American Medical Association has recently prepared a history and physical examination form which is designed to be a national form to be used in health examinations. An explanation of this form by Dr. Haven Emerson appeared in the A. M. A. Journal of May 12, 1923, and reprints may be obtained from the Journal office. One of these forms, according to an announcement made by Dr. Paul A. Turner, Director of Health of the State of Washington, will be sent to each physician in that state to be used as a model in making these examinations. It would be a great asset, if this plan were followed in every state. Very few physicians have any conception of the proper form to follow in making a real health examination. Usually it is a hit-and-miss performance, no two following the same routine. Hence the advantage of a regular form available for general examinations.

The people's health is the physician's trust. The profession must not fail in this trust thru any careless act in making health examinations.

FACTS CONCERNING CHRISTIAN SCIENCE

Every physician is aware that many patients treated by the believers in christian science have endured needless pain and sufferd permanent injury or defects which could have been prevented by rational treatment under the care of educated physicians. These facts have never been presented conclusively to the public for general reading. The newspapers seem to have hesitated in broadcasting the truth concerning these matters. So far as adults are concerned, if they choose to submit to unnecessary pain and discomfort or subject themselves to permanent disability for lack of proper treatment, there are no means of preventing such results, but it is inhuman to force such needless suffering and injury upon children who are helpless in the hands of parents and guardians.

The Illinois State Medical Society has taken this matter up and thru the Legislative Committee of the Council is preparing a book, in which the public is to be enlightened concerning the inhumanities of this present day witchcraft in such a manner as in some degree to assist in checking the activities of those who operate on the pockets of the sick while in the attitude of prayer. It is requested that readers of this journal, who are familiar with cases in which favorable results could reasonably have been expected to follow the use of proper medical or surgical measures, but in which serious injury resulted thru reliance on christian science, shall write reports of such cases to Dr. Chas. E. Humiston, 5533 Race Avenue, Chicago, Ill., Chairman of the Committee. It is requested that these stories be presented in language which lay readers will understand. It is believed such a book will be of great value.

GOITER PROPHYLAXIS

The efforts toward the prevention of goiter which were carried out systematically at Akron, O., have been the inspiration for prophylactic measures which have been widely adopted. Within recent times the Public Health League of Washington has accepted popularizing this treatment among the school children of the state as one of its special lines of work. It has given broad circulation to a pamphlet regarding simple adolescent goiter and its prevention. Already many inquiries have been received, indicating that this measure has excited general interest thruout the state. The school authorities in Yakima, Tacoma and Spokane have already adopted the prophylactic treatment thus recommended. In other cities the procedure is under favorable consideration and will doubtless be utilized. The prophylactic treatment is to be entirely voluntary, but is earnestly recommended on the part of the pupils. The favorable results already obtained in other states, where this or similar practice has been followed, promises a willing compliance on the part of the parents of most pupils. The treatment consists of giving each pupil a chocolate tablet containing ten milligrams of iodine, one per week for the forty school weeks of the year. If this practice were adopted universally among the school children of the Pacific Northwest, it is reasonable to presume that in a comparatively short space of time goiter in this section of the country would be very greatly reduced, much to the satisfaction of all concerned.

DEPARTMENT OF PUBLIC HEALTH LEAGUES

The public health work which has been accomplished by the states on the Pacific Coast thru the establishment of leagues for the conservation of public health, has been of a character which has justified their existence and has demonstrated that there was a field for such an organization. Especially notable have been the results obtained by the Public Health League of Washington during the past year. Its successful efforts in blocking undesirable legislation, hostile to the best health interests at the last session of the legislature, evidenced that the medical profession is a factor in health legislation, providing its efforts are coordinated and are made to function under efficient leadership. Similar results were obtained at the sessions of the legislatures of Oregon and Idaho.

In order that the accomplishments of these health leagues may be brought before the profession of the different states, it has been requested that Northwest Medicine establish a department in the interest of these organizations. This in an explanation for the Department of Public Health Leagues which begins with this issue. It is the purpose to publish from time to time a resume of the activities of the leagues of the three states. It is believed that the interests of these organizations may be advanced by this sort of publicity of the work which they are accomplishing.

THE MEETING AT SPOKANE

The meeting of the Washington State Medical Association at Spokane last month was a pleasing gathering for those in attendance. It was one of the smaller meetings in the history of the association. There were one hundred sixty representatives, of whom more than half were from other cities than Spokane. There was a very general representation from all parts of the state, but only a few from any one city. There were six representatives from Portland. According to the provision of the by-laws, only three papers were scheduled for each of the four sessions. This obviated the crowding of the program which follows an attempt to read an excess of papers in a given period of time. It also offers time for discussion. It was noted, however, at this meeting as in others of recent years that the practice of discussing papers has fallen into a decline. This may be due to modesty on the part of those in attendance, or the absence of discussion at meetings, graced by the presence of distinguished men from the East, may be reflected on home meetings of the state association. In either case, here is a field for returning to the old fashioned give and take discussion, which used to make medical meetings spicy and attractive. The quality of the papers presented was excellent. The fact that they were the product of members of the association was greatly to their credit. One can commonly acquire just as much information from such papers as those presented by the shining lights of the East.

The Spokane profession exhibited its usual hospitality, for which its members are well known among the medical men of the Northwest. Every one present announced that he had greatly enjoyed the meeting. The opinion commonly prevailed that it is yet to be decided as to the exact role which the state association meetings will hold in the future, in the presence of the numerous medical gatherings of latter days which commonly present programs of such an attractive nature as to impell the attendance of the general membership of the society, while the latter's exclusive gatherings receive less attention.

Preceding the state association meeting was that of state health officers. An interesting program was presented with papers featuring various health problems of state-wide interest. The Public Health League held its annual meeting in connection with one session, reports of the year's work being presented and officers elected for the ensuing year.

MEDICAL NOTES

OREGON

Addition to Health Staff. Dr. H. S. Capps, of Portland, has been made assistant state health officer. During the war he was in the U. S. Health Service and was later connected with Texas and Kansas state boards of health. He succeeds Dr. A. J. Warren, of the Rockefeller foundation, who has recently filled this position. Dr. William Levin has been placed in charge of the laboratory work. He was formerly state chemist of Texas and pathologist for the New York Department of Health. For the past two years he has been director of the Kansas state public health laboratory.

New Hospital Unit Started. The first unit of a three story hospital was begun at The Dalles last month, to be constructed by Drs. Hamilton. It will be 33 by 50 feet, to cost about $25,000. Ultimately there will be three units.

New Hospital to be Established. The Protestant Hospital Association of Baker has purchased a residence which will be remodeled for a small modern hospital. The trustees represent the protestant churches of the city. The association is capitalized at $50,000.

Dr. D. R. Ross, who has been connected for several years with the state hospital for the insane, has gone into private practice at Salem.

Medical Wedding. Dr. Chas. D. Wade, of Rosenberg, was last month married to Miss Hilda Bechtle of that city.

WASHINGTON

Hospital Destroyed by Fire. The Columbia Valley Hospital at Pateros was practically destroyed by fire last month. This is the second visitation within a short time. The repair work from the previous fire was just about completed and the hospital was soon to be reopened. The loss to the hospital is estimated at about $30,000.

New Head for Hospital. Dr. H. L. Lowell, recently of Walla Walla, has been appointed superintendent of the Oakhurst sanatorium, the county tuberculosis institution near Elma, to succeed Dr. R. J. Cary recently resigned.

New Hospital Begun. Work was begun on the new St. Peter's hospital at Olympia, which is to cost $310,000. It will be five stories, of reinforced concrete. When completed it will contain one hundred fifty beds.
same.

Nurses' Home to be Built. It has been decided to add a nurses' home to the Everett General Hospital that is under construction. The new building will be 115 by 82 feet and will be three stories high, containing forty rooms for the hospital staff, nurses and employees.

Doctors' Building to be Erected. Plans have been completed for the erection of a Medical Arts building in Seattle. It will be sixteen stories, 140 by 100 feet, erected on the corner of Fifth Avenue, Olive Street and Westlake Avenue. It will cost $1,800,000, to be financed and erected by the Great Northern Construction Company. The fifteen upper stories will be devoted to offices for physicians and dentists.

Appointed County Hospital Physician. Dr. Karl S. Staatz, of Tacoma, has been appointed superintendent of the county hospital. At the same time the office of county physician was abolished, which position has been occupied by Dr. C. P. Gammon for several years.

New Hospital Superintendent. Mrs. Ella W. Harrison, R. N., has arrived in Everett to become superintendent of the Everett General Hospital. She is a graduate of the Massachusetts General Hospital and Sloan Maternity Hospital of New York. She has served in hospitals of the state in past years.

Women's and Children's Clinic in Japan. Dr. Francis Houston, of Spokane, has sailed for Japan to take charge of a womens' and children's clinic in the devastated area. She goes there under the auspices of the American Women's Hospital. She will probably remain there for several months.

Rescue Work for Japanese. Dr. S. Tanda, of Seattle, with two Japanese physicians from New York, sailed for Japan last month to aid in rescue work. They were summoned by the Japanese government.

Lincoln County Medical Society held a meeting at Harrington, Sept. 9. The society endorsed the plan of goiter prophylaxis. A committee of physicians was appointed to bring the matter before the school boards of the county in an attempt to have the iodine tablet plan adopted.

Schick Test Administered. The Spokane health officers are attempting to administer the toxin-antitoxin diphtheria prophylactic treatment to its school children. It is said to be the only city of 100,000 inhabitants to attempt to cover the entire city with this treatment. Already three thousand children have received the treatment and it is expected that the remainder will soon receive the

New Public Health Nurse. Miss Glory H. Ragland came to Tacoma last month as the director of the Public Health Nurses Association. For the past five years she has occupied a similar position in St. Louis.

Dr. Torlief Torland, of Seattle, returned home last month after spending a year in study at the various medical centers of Norway, Germany and Austria.

Dr. F. C. Rykken, recently of Philadelphia, has located for practice in Bellingham.

Dr. I. L. McCallahan, who has practiced for several years in Yakima, has located for practice at Mt. Vernon.

Dr. Chas. J. Simon, who has practiced for the past two years in Seattle, has located for practice at Skykomish.

IDAHO

New Hospital Opened. The new Latter Day Saints' Hospital at Idaho Falls was formally opened last month. The institution is equipped with all modern hospital appliances and will be a great asset to that community.

New Superintendent of Hospital. Dr. R. G. Easton who has been assistant superintendent of the Eastern Washington Hospital at Medical Lake, Wash., has been appointed superintendent of the State Hospital for the Insane at Blackfoot, to succeed Dr. E. M. Hassen, resigned, who will continue practice at Blackfoot.

Dr. E. P. Oldham, recently of Logan, Utah, has located for practice at Burley.

OBITUARY

Dr. Harry A. Compton, of Bellingham, Wash., died Sept. 19, after a week's illness from pericarditis. He was born in Nashville, Tenn., in 1864. He received his early schooling in that state and graduated from the University of Chicago Medical School. He practiced in Tennessee and Texas, coming to Bellingham in 1889. He was county physician for six years, beginning in 1915. He was one of the best known physicians of the city and was universally held in high esteem.

Dr. Charles S. Menzies, of Portland, Ore., died Sept. 13, from acute nephritis, after an illness of ten days. He was born in Janesville, Wis. in 1885. After graduating from the public schools he attended Beloit College and the University of Wisconsin. He received his medical education at Rush Medical College and was for two years house physician at Cook County Hospital, coming to Portland in 1911. Since 1916 he has been a member of the faculty of the University of Oregon Medical School in the department of anatomy. For his personal qualities and professional skill he held the admiration and respect of students, patients and friends, and was highly esteemed by the medical profession.

CORRESPONDENCE

PIERCE COUNTY SOCIETY PICNIC

To the Editor:

Every summer the Pierce County Medical Society has a picnic. Of late years it has rather degenerated into driving out to lakeside near the twilight hour, bustling about to find a proper setting for the hard boiled eggs and sandwiches, about three innings of baseball before the stars come out and scampering home. This year we took a whole half-day off, incredulous as it may seem. Nature was very kind to us, as she so often is to doctors, the day being perfect, the water not below 75 degrees for swimming, and the moonlight on the homeward trip intoxicating (poetically speaking)

On September 11 we had our first regular meeting of the fall season. About fifty members were present at the dinner which was a jolly affair and full of good fellowship. Dr. Coffey, of Portland, was asked to give his views on the status of surgery one hundred years from now, and from a droll beginning it developed into a beautiful picture of the time to come when surgical or medical treatment would be merely the perfect fruit after a thoro preparation for it by means of diagnostic helps and methods, wise clinical appraisal and keen medical and surgical judgment. Dr. Blackford, of Seattle, projected his keen intellect into the future and, bringing it to focus on the doings of medical men a century hence, found no surgery whatever; all ailments would respond instantaneously to a few years of the Sippey treatment. Dr. Dwyer, of Seattle, gave a deep talk on x-ray therapy of the future. Having then run out of "distinguished guests," home talent was called on. Drs. Yocum, Rich and Hicks added a dash of lively home-brew, is it were, to the general merriment.

At 8:15 the regular program began and between Drs. Coffey and Blackford the conditions known as gastric and duodenal ulcer were presented in an orderly, comprehensive and clear manner which won the admiration of all the seventy or eighty members present.

J. P. Kane

REPORTS OF SOCIETY MEETINGS

OREGON STATE MEDICAL SOCIETY

MINUTES OF THE FORTY-NINTH ANNUAL MEETING OF OREGON STATE MEDICAL SOCIETY, MULTNOMAH HOTEL, PORTLAND, OREGON, JULY 10-11, 1923.

House of Delegates

FIRST SESSION, JULY 10, 9 A. M.

The House of Delegates was called to order Tuesday morning, July 10, at 9 a. m., by the President, P. J. Bartle, of Eugene.

The first order of business was the reading of the minutes of the House of Delegates of the last annual session by Dr. C. L. Booth, Secretary. It was moved by Dr. C. J. Smith that, inasmuch as certain portions of the minutes pertaining to the introduction of by-laws had been declared unconstitutional by Judge Carey, this portion should be stricken out. Carried.

The roll call showed the following members of the House of Delegates to be present:

Drs. P. J. Bartle, E. B. McDaniel, S. M. Strohecker, C. L. Booth, William Kukendall, A. W. Baird, M. B. Marcellus, Paul Rockey, C. J. Smith, A. J. Browning, C. L. Rybke, S. E. Josephi, Jesse M. McGaven, William House, A. M. Webster, R. W. Pilkington, A. B. Starbuck, R. E. Kleinsorge and David Robinson.

In the absence of a duly accredited delegate, on motion, properly seconded and carried, Dr. W. T. Phy was seated as a delegate from Union County and Dr. Neulen from Astor was seated for Clatsop County.

SECRETARY'S REPORT

To the Members of the House of Delegates of the Oregon State Medical Association:

Secretary's report from Oct. 26, 1922 to July 10, 1923:

Altho the time since the last annual meeting has been only a little over eight months, this period has been marked by events more or less out of the ordinary. Because of these circumstances it may be well to review some of the occurrences which have transpired in this time.

A report of the office of Secretary must include the activities of three different officers. Dr. W. L. Bishop was elected Secretary at the annual meeting in October to succeed Dr. T. Homer Coffen. On December 20, Dr. Bishop resigned the position and the Council elected Dr. Otis B. Wight to fill the vacancy. Dr. Wight held the office of Secretary until February 28, when he went East, since which time it has been assumed by the present incumbent. About the time Dr. Wight took charge, arrangements were being made for carrying out the provisions of the amendment to the constitution introduced at the annual meeting last October, raising the annual dues to $20.00, and providing by the terms of a resolution introduced at the same time, for a full time Executive Secretary, office headquarters, absorption of the League and general extension of the work of the office of Secretary. To freshen your memories this amendment is herewith given:

Article IX of the Constitution of the Oregon State Medical Society should be amended to read as follows:

> "Funds for meeting the expenses of the Association shall be arranged for by the House of Delegates by an equal per capita assessment not to exceed $20.00 per capita per annum upon each county and district society, to be fixed by the House of Delegates; by voluntary contribution and from profits of its publications. Funds may be appropriated by the House of Delegates to defray the expenses of the annual sessions, for publication and for such other purposes as will promote the welfare of the Association and profession."

The passage of this amendment to Article IX of the Constitution by the called meeting of the House of Delegates, Jan. 2 and 3, was supposed to complete the final step in this forward program and to place the provisions of the amendment in force. Questions as to the legality of this meeting arose, however, and the whole situation was put up to Judge Carey, our Advisory Counsel, who declared the January meeting to be illegal and the amendments both to the constitution and the by-laws inoperative. In the meantime, before this decision, the State Council, anxious to get the reorganization under way, and not anticipating any holdup of the program, authorized Dr. Wight to obtain offices, secure a stenographer, etc. This Dr. Wight did, obtaining offices in the Fitzpatrick Building, adjacent to the State Board of Health. Dr. Wight spent a great deal of time going over the work and outlining a constructive program for the coming year. Judge Carey's decision changed the situation entirely. It has resulted in a great deal of confusion in the procedure of collecting the annual dues and in determining the status of members of the State Society, to say nothing of a reciprocal prevalent feeling among the members themselves of not knowing where they are at.

The Council, having voted $10.00 per member to the League, was forced to rescind its action, leaving the League high and dry without visible means of support. This situation was met by the officers of the League going down in their pockets and loaning the League $500.00 to cover the deficit caused by the expense of the legislative campaign in February last.

Gradually the tangle began to straighten out. The Portland City and County Society, at is annual meeting in December, passed an amendment raising its dues to $25.00 per year, $20.00 of which was to go to the State Society. In like manner component societies in the Willamette Valley, the Southern and Eastern Oregon Societies went on record in favor of the increase. These actions being unquestionably legal, with this as a basis and as by a gentlemen's agreement, the Secretary's office has been billing the members for dues of $20.00 per year and a large number have sent them in. A very few members in societies, not having gone on record in favor of the amendment, have sent in $5.00 as under the old constitution. There being no way to hold them differently, this office could not do otherwise but to give them receipt in full for 1923 dues. A few have written in, saying they considered the increase exorbitant and asked to be dropped. A few others said their incomes would not warrant the increase. There has been some unpleasantness and the Secretary has been the goat. We have tried to be courteous and meet the criticism in a sympathetic manner. Various of the officers from time to time have attended meetings of the component societies and explained the situation and uniformly these societies have gone on record favoring the increase. This amendment to the constitution comes before us at this session for final disposition.

We feel that all possible economies have been exercised in the management of the office. Since April 1st we have been sharing offices with the League for the Conservation of Public Health and your secretary is likewise Secretary of that organization. We feel that with a full-time Executive Secretary this would be an ideal arrangement for the two societies to share the same office and overhead. At present the combined overhead is as follows:

	Per Month
Rent	$ 30.00
Miss DeParcq, stenographer	100.00
Telephone, about	2.00
Supplies, postage, etc.	25.00

There are no paid officers other than the stenographer.

It is earnestly hoped that at this session all of these discrepancies may be straightened out and that a forward plan of action for the coming year may be agreed upon and, this having been done, all join whole-heartedly in carrying it out.

It may be noted in passing that, in going over the original articles of incorporation, it was found that the organization was incorporated under the name of the Oregon State Medical Society. The Incorporation Commissioner is authority in the statement that it requires 75 per cent of the membership at a meeting called for that purpose, to have the change legal.

At the recent annual meeting of the staff of the Northwest Medicine, it was requested that State Society Secretaries be asked to remit on the basis of $2.00 per year instead of $1.00 per member.

Necrology. Since last October the following have died:

Dr. R. J. Marsh, Portland, Dec. 18, 1922.
Dr. Geo. F. Koehler, Portland, March 10, 1923.
Dr. E. M. Johnson, Portland, Jan. 18, 1923.
Dr. Henry Hart, Medford, Dec. 4, 1922.
Dr. C. V. Fisher, Klamath Falls, Jan. 20, 1923.
Dr. J. Griswold, Helix, Jan. 31, 1923.
Dr. C. H. Newth, Philomath, Dec., 1922.
Dr. H. B. Haile, Madras, Dec. 16, 1922.
Dr. H. S. Pernot, Corvallis, July 31, 1923.

Committee On Medical Defense. The work of this Committee is one of the outstanding services of the Society to the members and each year is increasing its surplus and getting on a more substantial basis. Several suits have been brought to the attention of the Council, on which the Committee on Medical Defense will report more fully.

Meetings of the Council have been held monthly or oftener, with fairly good attendance.

January 17, 1923, the Council passed a motion requesting that amendment to Section 3, Chapter 6 of the By-laws be adopted as follows:

To insert after the word "Councillors", at the end of the first sentence and second paragraph of Chapter 3, "in the absence or incapacity of the treasurer, the secretary shall be authorized to draw checks on the funds of the Oregon State Medical Society, providing that the secretary has not signed the warrants authorizing payments from these funds."

Insurance. The Norwich Union informed the state office the first of the year that they would no longer write a blanket policy for state organization members, since not enough members carried insurance with them to make it profitable, but that they would write individual insurance at the board rate of $21.00. Effort was made to secure some other company to write blanket insurance, but without success, so at the present time most of the members are carrying their insurance individually where they choose. An attempt will be made later to secure a contract with another company.

State Membership. The books of the Secretary show the following membership in the component county societies:

	Membership	Paid	Unpaid
Eastern Oregon Medical Society	45	20	25
Southern Oregon Medical Society	18	8	10
Central Willamette Valley District	27	7	20
City and County Medical Society	344	292	52
Lane County Medical Society	29	11	18
Jackson County Medical Society	23	4	19
Polk-Yamhill-Marion Medical Society	52	13	39
Coos and Curry Medical Society	15	2	13
Clatsop County Medical Society	10	2	8
Central Oregon Medical Society	4	4	
Baker County Medical Society	14	1	13
Klamath and Lake County Medical Society	11	1	10
Washington County Medical Society	3	1	2
Tillamook County Medical Society	9	2	7
Total	604	368	236

This is a better showing than was made at the annual meeting last year.

In going over the books, 84 have been placed in the delinquent list because of non-payment of dues since 1920 and 1921.

Central Oregon Society (Bend), which has been practically defunct for the past several years, is showing signs of life and a reorganization there is highly probable.

Total receipts for the year, including dues to component county societies, forwarded to the state treasurer's office, with state dues and later remitted, as shown in disbursement, amount to $7,608.57.

Disbursements for the past year have been as follows:

Telegrams and long distance calls	$ 16.50
Northwest Medicine	501.00
Petty Cash	55.00
Refund to District Societies	723.00
Loan, with interest	364.00
Flowers	5.00
Telephone service	2.50
Office equipment	121.62
Postage	71.96
Office rental	180.00
Supplies and printing	79.37
Stenographic services and supplies	673.52
Total	$2,793.47

Note: Item of $723.00 pro rata returned to component societies. Outstanding bills:

American Medical Association, 1923 American Medical Association Directory	$ 15.00
F. W. Baltes & Co., printing programs for 1923 annual meeting	60.00
Irwin-Hodson Co., celluloid buttons, annual meeting	28.75
Postal Telegraph Co., messages	1.18
Western Union Telegraph Co., messages	6.83
Total	$111.76

Respectfully submitted,
C. L. Booth,
Secretary.

TREASURER'S REPORT

Dr. S. M. Strohecker, Treasurer, gave the report of the treasurer, showing total receipts for the year to be $7,608.57; balance in medical defense fund $6,868,39; general fund $3,233.06, total $10,101.45.

President Bartle then appointed a special Auditing Committee, consisting of Drs. C. J. Smith, M. B. Marcellus and Wm. Kuykendall, to whom the reports of the Secretary and treasurer were referred.

Dr. E. B. McDaniel made a brief report of the transactions of the Council for the year.

Under reports of Standing Committees, Paul Rockey stated that a full report of the Medical Defense Committee would be forthcoming later.

Dr. W. T. Williamson, Chairman of the Committee on Hospital Standardization, was unable to be present.

Dr. S. M. Strohecker reported for the Entertainment Committee.

The chair appointed the following on the Committee on Resolutions: Drs. N. W. Jones, David Robinson and William House.

The Committee on Revision of Constitution, consisting of Drs. W. T. Williamson, C. J. Smith and C. U. Moore, then reported thru Dr. C. J. Smith. He first read the amendment to Article 9 of the Constitution, raising the annual dues to not more than $20.00 per year, which was introduced at the last annual meeting, in October, 1922. This amendment, having been laid over one year, as required by the constitution, notices of which having been duly sent officially to each component and district Society, at least two months before this session, its adoption was moved by Dr. C. J. Smith.

Dr. S. E. Josephi raised the question of the use of the word "association."

Dr. C. J. Smith explained that this change would be taken up later in the complete revision of the constitution. In the discussion which followed Dr. Josephi said that he did not wish to oppose the adoption of the amendment, but felt that if the dues were increased, in all probability a large number of the members would object to paying this sum and would drop out of the Society; that he considered it wiser to keep the dues lower and retain the members.

Dr. Jesse M. McGaven agreed with Dr. Josephi and said the increase would work a hardship on some who could not afford it. Furthermore, that the deficit of last year was largely caused by the contribution by the Society of $500 to the Committee that carried on the antivaccination fight.

Dr. David Robinson, speaking for the Tillamook County Society, felt that the outlying County Societies would object seriously to the increase.

Dr. Wm Kuykendall suggested a general referendum, if necessary, and believed that the percentage of loss would be very small.

Dr. Neulen of Astoria spoke against the measure.

Dr. Phy of Hot Lake thought that no one would object to the increase, if he once definitely understood how the money was to be spent.

Dr. T. Homer Coffen, as former State Secretary, spoke of the hoplessness of trying to accomplish anything on $5.00 per year, that no one regretted the $500.00 given to the Antivaccination Committee, which contributed to the deficit of last year, and said that the money would be difficult to collect, be it $5.00 or $20.00.

Dr. S. M. Strohecker, is his characteristic way, summarized the benefits to be derived from the increased dues in carrying out the forward program.

The question being called for, amendment was adopted by 24 to 2.

Dr. C. J. Smith then submitted an amended constitution to lie over for one year.

The important changes in the constitution are here summarized. Thruout the constitution the word Association has been changed to Society to correspond to the phraseology of the original Articles of Incorporation of the organization.

Article 4, Section 1—This Association shall consist of members and delegates, is changed to "This Society shall consist of active, non-resident, associate and honorary members."

Article 5, Section 2—Increase in the House of Delegates, "Any officer of the American Medical Association who is a member of the State Society."

Article 7, Section 2—The time and place for holding each annual session shall be determined by the Councillors instead of by the House of Delegates".

Article 8 reads "the number of councillors from ten to nine and their term of office from 5 years to 3 years each, the Council to consist of nine councillors, the President, President-elect, First Vice-president, Secretary and treasurer as ex officio members."

Section 5 reads, "The President shall be elected one year in advance of taking office and during that year shall be called the President-elect. At the first annual election held under this constitution, one-third of the councillors shall be elected to serve for one year, one-third for two year sand one-third for three years. Thereafter, at the expiration of the term of office of any Councillor, his successor shall be elected for a term of three years."

Following this the revisions of by-laws was taken up by Dr. Smith, who read them as amended, noting changes, these to lie on the table for one day when action may be taken.

Dr. A. W. Baird then inquired as to provision for dues of associate and non-resident members.

The chair decided that such changes could be incorporated on the following day.

NOMINATION OF OFFICERS

The House then constituted itself into a Committee on Nominations to nominate officers for the ensuing year.

Dr. C. J. Smith called attention to the fact that next year would be the fiftieth anniversary of the Oregon State Medical Society, and that it would be entirely fitting that this Society should reelect for its fiftieth President, Dr. Alfred C. Kinney of Astoria, who organized and was the first president of the Society forty-nine years ago.

In addition to Dr. Kinney, Drs. E. F. Tucker and E. B. Pickel were nominated for President-elect. Nominations for First Vice-president: Drs. Paul Rockey and Richmond Kelley; Second Vice-president, Drs. Newlen and Phy; Third Vice-president, Drs. David Robinson and R. W. Pilkington; Secretary, Drs. C L. Booth, Josephi and A. J. Browning; Councillors, Drs. R. C. McDaniel and R. S. Stearns.

Announcement was made of the entertainment for the ladies and a change of date for the banquet from Wednesday evening to Tuesday evening.

HOUSE OF DELEGATES

SECOND SESSION, JULY 11, 9 A. M.

The meeting was called to order by P. J. Bartle, President.

The roll call by the Secretary showed the following present: Drs. P. J. Bartle, S. M. Strohecker, C. L. Booth, Wm. Kuykendall, A. W. Baird, M. B. Marcellus, Paul Rockey, C. J. Smith, C. L. Rzbke, S. E. Josephi, Jesse M. McGaven, William House, R. W. Pilkington, S. M. Starbuck, R. E. Kleinsorge, David Robinson and W. T. Phy.

The first order of business was the reading of the minutes of the previous meeting. Approved as read.

Dr. E. B. McDaniel, Chairman of the Council, had nothing to report from that body.

Committee on Resolutions to report later.

Unfinished Business. Dr. C. J. Smith brought up the matter of the by-laws as introduced by him on the previous day. Being lengthy and having been read once, attention was called to the changes made. It was moved and seconded that the full report of the committee on revision of by-laws be adopted.

Dr. Phy asked for information on the status of non-resident and associate member, what dues should they pay, this not being defined in the copies of the by-laws.

Dr. Booth spoke of the need of the Secretary's office knowing what is to be done. Thought it should be threshed out here because this is the time to decide it. When is this increase operative and when shall we hold the members of the State Society for $20.00 per year.

Dr. Smith said that the question had been submitted to the committee to decide; that the books be opened in the regular way up to July 12 at $5.00 per year, then from July 12 at the rate of $20.00 per year, unless the parties having paid want to consider it as a gift.

Dr. Webster in order to clear up the matter in regard to non-resident members, moved to strike out the word "non-resident" in line nine, Chapter 1, Section 5, to read "regular dues." Amendment accepted by the Committee.

Dr. Paul Rockey thought it should be left to the Council to decide about non-resident membership and suggested that the following be added to the second paragraph of Section 5, "the dues of this Society for non-resident members may be reduced or remitted in the judgment of the Council." Amendment accepted by the Committee.

Drs. Booth and Coffen brought up the matter of the dues of the members of the Faculty of the Medical College. The word "associate" was then added to precede the word non-resident members in the amendment just made, the amendment now reading "the dues of the Society for associate members and non-resident members may be reduced or remitted in the judgment of the Council.

Other changes in the by-laws:

Chapter 9, Section 1, provides for "An assessment of $20.00 per capita on the membership of the component societies is hereby made the annual dues of this society."

Chapter 13—added, reads: Section 1—"The proper officers of this society are hereby authorized and directed to remit as rapidly as available to the duly elected treasurer, who shall be properly bonded, of the League for the Conservation of Public Health, a sum of money not to exceed $10.00 per member per year; but in no instance shall a sum be remitted greater than fifty per cent of the amount received from each member during the year.

Section 2. In consideration of the sum or sums of money set aside for the League for the Conservation of Public Health as provided for in Section 1 of this Chapter, the Executive Secretary of the League shall be required to perform the work of an Executive Secretary of the O. S. M. S. under the direction of the Council of this Society."

There being no further changes desired in the by-laws, motion for adoption being put, the report of the Committee was adopted.

Unfinished Business. Dr. A. B. Starbuck moved that a vote of thanks be extended to the Committee on Revision of Constitution in appreciation of their painstaking work. Carried.

New Business. Dr. A. J. Browning introduced a resolution requiring a physical examination, especially of eyesight, of all applicants to drive automobiles. Referred to Committee on Resolutions.

A resolution by Dr. W. T. Williamson was then introduced, and read, to the Governor concerning the rumored or suggested removal of Drs. Steiner and Griffith of the State Hospital for the Insane. On motion the resolution was referred to the Committee on Resolutions.

It was moved and seconded that the Secretary be instructed to send copies of the resolution by Dr. W. T. Williamson, pertaining to Drs. Steiner and Griffith, to the governor and the members of the Board of Control.

A resolution was then read from Dr. Ralph Fenton asking for more stringent regulations in the preparation and dispensing of lye. On motion this was referred to the Committee on Resolutions with the request that they report back as early as possible.

Dr. Webster brought up the matter of the refusal of the State Accident Commission to pay hospital bills. Dr. E. B. McDaniel moved that a committee be appointed to present the matter to tbe Council and the Committee. Seconded and carried. (Committee not yet appointed.)

Committee on Resolutions then reported.

On motion, duly seconded, the resolution as read by Dr. Browning, requiring physical examination of auto drivers, was then adopted.

The resolution of Dr. Ralph Fenton dealing with lye poisoning was adopted.

The House of Delegates then extended a vote of thanks to the speakers who had so kindly given a program of unusual merit, to the management of the Multnomah Hotel and to the Entertainment Committee for the entertainment provided.

Dr. C. U. Moore moved that the hotel bills of the speakers appearing on the program and that the bill for stenographic work for the Committee on Revision of Constitution be paid by the Society. Carried.

Dr. C. J. Smith moved that the Auditing Committee be authorized to expend a reasonable amount for auditing the books. Carried.

Dr. Phy withdrew his name as candidate for Second Vice-president and nominated Dr. Otis B. Wight. Dr. A. J. Browning also withdrew his name.

Dr. William House of the Committee on Resolutions presented an "In Memoriam" to those who had died during the past year. It was moved and seconded that copies be sent by the Secretary to the nearest relatives of the deceased.

Reading of the minutes by the Secretary.

Dr. E. B. McDaniels moved the adoption of the minutes as a whole. Carried.

Adjournment of the House of Delegates to go into general session.

General Business Session

Meeting of the general business session, Wednesday, July 11, 10:30, a. m., Dr. P. J. Bartle, President, presiding.

ELECTION OF OFFICERS

The Secretary read the report of nominations made by the House of Delegates. Drs. Pickel and Tucker withdrew their names for the Presidency and Dr. A. C. Kinney of Astoria was unanimously elected President-elect. He was conducted to the platform by Drs. N. W. Jones and C. J. Smith, and made a short talk on the origin of the Oregon State Medical Society. He spoke as follows:

"Mr. President and members of the Oregon State Medical Association: In the preparation for the semicentennial of our association, you have reminded me of its near approach, and by your decree of this moment, I, its first president, am commanded to be your president during the coming semi-centennial year."

"Your thoughtful consideration of me today, so demonstratively expressed, I deem is a recognition of my youthful professional enthusiasm, the fires of which have ever kept burning, and of the credit conferred at that time (handed down to you) for a very active part taken by me in the original organization of this association, followed by an ever sympathetic watchfulness of its onward, upward progress during all these past years.

"I hope, then, it is with pardonable pride I may now boast of an early activity in gathering together into a membership of the Oregon State Medical Association a bunch of men, every man of them a nobleman, each with an unquestioned medical pedigree, and not an inefficient practitioner among them. They were of God's own people; not one of them do I see today.

"Of course I was very young for the part I was at that time taking, but being a native Oregonian, I was fortunately of an early large friendly acquaintance amongst the physicians. Four years in New York City as a medical student and hospital interne, followed by two year's practice from a Portland location, had enlarged such acquaintance and my professional enthusiasm seemed to be catching, hence, I, a neophyte, was selected as president, that I might with greater prestige continue to enlarge the membership and bring the organization into a harmonious unit.

"Thus the medical men of Oregon—the finest men in the world—were brought into team work, harmony and friendship, and it made a splendid team from the first crack of the whip until today.

"Fellows, I appreciate to fullness your kind conideration of me today. I thank you."

Other officers elected were as follows: First Vice-president, Dr. Richmond Kelley; Second Vice-president, Dr. Otis B. Wight; Third Vice-president, Dr. David Robinson; Secretary, Dr. C. L. Booth; Treasurer, Dr. Ralph Walker; Councillors, Drs. R. C. McDaniel and R. S. Stearns.

Dr. P. J. Bartle, President, announced that the President's address would appear in Northwest Medicine.

There being no further business the General Business Session adjourned.

Scientific Program

TUESDAY, JULY, 10, 11 A. M.

Malignant Disease and its Treatment by X-Ray, Radium and Electrocoagulation with lantern slides. Dr. George Pfahler, Philadelphia. Discussion opened by Dr. Otis B. Wight, followed by Dr. Ralph Walker, Dr. Ziegleman and E. A. Sommer. Closed by Dr. Pfahler.

1:30 P. M.

Clinical Report of Chronic Suppuration of Middle Ear by Ionization of Zinc. Dr. Mearle C. Fox, Portland. The Discussion was opened by Dr. H. R. Lucas. Closed by Dr. Fox.

Prevention and Treatment of Goiter. Dr. O. P. Kimball, Cleveland Clinic. Discussion was opened by Dr. J. Earl Else, followed by Dr. H. M. Brown of Milwaukee and closed by Dr. Kimball.

Ancient and Modern Plastic Surgery, illustrated with lantern slides. Dr. George V. I. Brown, of Milwaukee. Discussion opened by Dr. Jos. A Pettit followed by Dr. H. M. Brown and S. G. Bettman. Closed by Dr. Brown.

Environmental Factors which Influence Nutrition. Dr. Borden S. Veeder, St. Louis. Discussion opened by Dr. L. H. Smith, followed by Dr. H. O. Jones of Chicago Health Department, Dr. C. U. Moore and Geo. V. I. Brown. Closed by Dr. Veeder.

On the evening of July 10 a banquet and after-dinner dance was held at the Multonomah Hotel.

WEDNESDAY, JULY 11, 10 A. M.

Distribution of Actinomycosis in the United States. Dr. A. H. Sanford, Rochester, Minn. Discussion opened by Dr. J. C. Elliott King, followed by Dr. E. B. McDaniel. Closed by Dr. Sanford.

Biologic Causes of Incompetency. Dr. Horace Brown, Milwaukee, Wis.

It was moved by Dr. Phy that the Society do not discuss Dr. Brown's paper but that he be extended a vote of thanks. Carried .

1:30 P. M.

Innervation of Lungs with lantern slides. Department of Anatomy, University of Oregon. Discussion opened by Dr. J. Earl Else.

The Value of Blood Chemistry in Pregnancy. Dr. E. H. McLean, Oregon City. Discussion opened by Dr. Millett, Portland, followed by Dr. Amos. Closed by Dr. McLean.

Work of American Women's Hospital in Europe with moving pictures. Dr. Esther Pohl Lovejoy.

Adjournment.

WASHINGTON

KING COUNTY MEDICAL SOCIETY

Pres., C. E. Hagyard, M. D.; Sec'y, R. F. Hain, M. D.

The general meeting of King County Medical Society was held in the Public Safety Building, Seattle, at 8:15 p. m., Sept. 10, with President Hagyard in the chair. Minutes of the previous meeting were read and approved.

Communications from the Yakima County Medical Society relative to the prevention of goiter and resolutions which have been adopted by the House of Delegates of the A. M. A. pertaining to the unnecessary, unprofessional and unlawful prescribing of alcoholic liquors by unscrupulous physicians were read.

PAPERS

Economic Aspects of Goiter. By Dr. J. C. Moore. He suggested that the organization for the prevention of goiter begin with the family physician, discussed the stages in an individual's life in which thyroid is common and gave some of the causes and the results of goiter. He believes the economic loss from goiter is greater than from smallpox.

Prevention of Goiter. By Dr. P. V. von Phul. Goiter is practically world wide. The Pacific Northwest harbors the largest proportions of both simple and exophthalmic goiter. It is probable that the economic loss to the state from those incapacitated for work by reason of goiter is as great as that by tuberculosis, altho up to the present time nothing has been done to prevent goiter except among animals.

Dr. John Hunt gave a summary of pathologic types found in surgical goiter cases.

Mr. Robert O. Jones addressed the meeting along the lines of organization and suggested methods by which this goiter campaign might be brought about in the State of Washington.

Dr. E. W. Young said that over fifty publications in the State of Washington are giving the health talks as provided by the Public Health League but the Seattle newspapers will not cooperate. He moved that the society endorse the movement of the Public Health League and the president appoint a committee of three, to be known as the Goiter Committee, which is to work with the league and the city school board. Dr. von Phul suggested that before any preventive measures are instituted it would be necessary to make a survey of the schools of King County before intelligent measures could be adopted. Dr. Young's motion was unanimously passed.

PIERCE COUNTY MEDICAL SOCIETY

Pres., J. P. Kane, M. D.; Sec'y., W. B. Penney, M. D.

The regular meeting of the Pierce County Medical Society was held at Tacoma, Sept. 11, at the Tacoma Hotel.

In honor of Drs. R. C. Coffey and John M. Blackford, a dinner was held at 6 o'clock, in the Stone Room, about forty members of the society attending. The regular meeting was held at 8:15. About seventy-five members were present.

The applications of Drs. L. J. Hunt, B. J. Gilshannon, J. S. Smeall and J. F. Steele were read and referred to the Board of Trustees.

Resolutions were adopted regarding members of the society who have died during the past six months. These were ordered placed on the minutes and copies sent to the respective families. The members were Dr. Charles S. Cope, deceased April 23; Dr. A. E. Goldsmith, deceased June 22; Dr. Albert Osburn, deceased July 26; Dr. Saxe W. Mowers, deceased Sept. 5.

Dr. Kane requested that each member write an article for the News-Tribune in the Public Health space.

PAPERS

The Diagnosis and Differential Diagnosis of Gastric and Duodenal Ulcer. Dr. John M. Blackford, of Seattle. He outlined the medical treatment, following quite closely the Sippy treatment. He gave the indications for surgical interference, stating that in most chronic cases surgical interference was less expensive than medical. He called attention to the danger of perforations in undiagnosed cases.

The Surgical Treatment of Gastric and Duodenal Ulcer. Dr. R. C. Coffey, of Portland. He stated that the Sippy theory of treatment was correct and would probably be successful in over 50 per cent of early cases, but all cases of over one year's standing will have a better chance of permanent cure by surgical means. From his experience he does not believe that an ulcer predisposes to cancer.

The papers were discussed by Drs. R. C. Morse, H. J. Whitacre and C. D. Hunter.

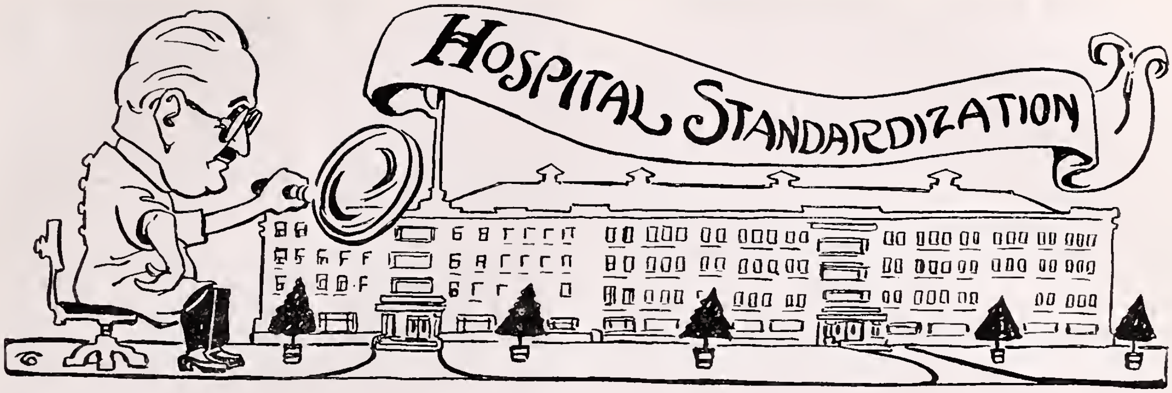
SPOKANE COUNTY MEDICAL SOCIETY

Pres., C. M. Doland, M.D.; Sec'y, G. H. Anderson M.D.

The Spokane County Medical Society held its regular meeting at Spokane, Sept. 13.

The scientific program consisted of a paper, "The Inheritability of Cancer in Man, Based on Animal Experimentation," by Dr. H. Gideon Wells, Chicago, presented by Frederick Epplen.

The program for prophylaxis of goiter among school children, advocated by the Public Health League, was adopted by the society, and a committee was appointed by the president to find ways of carrying it out.



Edited by GEORGE W. SWIFT, M. D.

THE NURSE'S TRAINING

The medical profession should be vitally interested in other things about the hospital than their particular cases and the service that their patients receive. The administration of any hospital has many problems to face, but the training school for nurses, perhaps, requires the most intensive thought. It is not an easy matter at the present time to secure young girls out of high schools and the universities to enter training. The work is hard, the three years spent in training may be a trifle long, and the nurse upon graduating does not make on the average any more than girls in other walks of life not requiring so much study and preparation.

Two factors are of importance to the medical profession, first, the health of the nurses in the hospital during their training; second, the encouragement of suitable candidates for the training schools. Most hospitals select one or two physicians, whose duty it is to examine the nurses on entrance to the hospital and to care for during their training.

It might be interesting to know the number of acute tuberculous cases that develop among the student nurses during the course of training in the hospitals of the state. Recently, while talking to the epidemiologist of the State Board of Health, some rather startling figures were given. It is not necessary to go into detail regarding the individual hospitals but it is important to call the attention of the profession to the fact that, when they are called upon to examine or care for a nurse in training, the utmost care should be directed toward the physical examination and treatment. This is especially true with the internists who should be on the lookout for tuberculosis. The conditions that lead to tuberculous lesions are close confinement, long hours, and too little outdoor exercise. These conditions are found in practically every hospital and it is really surprising the number of tuberculous cases that develop among the nurses.

In one hospital recently seven nurses were on duty with septic sore throat, all of them had vicious looking tonsils. Such a state of affairs should not exist and the examining physician for that hospital should be dropped and a new one appointed. In this day of preventive medicine, to permit a group of young ladies to start a three year course, where they will come in contact with acute pharyngeal infections without having good teeth, a clean nasopharynx and tonsils removed, is truly unforgivable. Because a man does not believe in the wholesale removal of tonsils is no reason why he should not accept modern theories regarding infection.

The Student Nurses. A forward step will be taken this fall in the training of nurses. The University of Washington will have for the first time a class of forty-five or fifty nurses in a new department of the Extension Course. They will be given fifteen hours work in dietetics and chemistry. To say this is a forward step is putting it very mildly; it is a tremendous advance. Heretofore the nurses received practically no laboratory work in diagnostic food values. They meant nothing to them except a series of numbers after each dish of food. To work out the actual value in calories of an egg, a piece of bread, a slice of beef, a cracker or a cube of sugar will fix for all time in the nurse's mind the actual food value. To analyze these substances in the chemical laboratory will surely give them a tremendous advantage. Three of the Seattle hospitals have enrolled for this year—the Minor, Seattle General and the Swedish.

Another innovation is the two hour study period which some of the hospitals have adopted. A nurse in training cannot be expected to juggle bed-pans, make beds, and wait on doctors during the daytime and study at night. Here again progress is marked. Some of the hospitals have now established recreation grounds for their nurses. This, it is hoped, will be encouraged in every training school. The young ladies who contemplate entering training in the future will wish to know what provision is made for recreation, what provision is made for scientific study, what provision is made for physical examination and care during their training. They have a right to know these things and the hospital superintendents of today expect them to ask such questions.

PUBLIC HEALTH LEAGUES

BUILDING A PERMANENT STRUCTURE

The ever-increasing trend in the United States to seek legislation on health problems, in proportion to the growing interest and attention given public health, is evidenced by the deluge of laws proposed and the fact that more than 200 new health laws were enacted this year. Of these, 40 concern municipal health, 24 are related to tuberculosis and 19 pertain to foods and drugs. Many of these laws are wise and just, some unwise and a few positively dangerous. More and more it devolves upon the medical profession to take an active part in solving these problems and to keep a watchful eye upon those insidious enemies of public health, who are ever on the alert to hand to the scientific physician the "hemlock cocktail". On every hand is seen the disposition to curtail the rights of the medical man, to restrict and hamper him in the prevention and treatment of disease, to discredit him and to set aside his judgment for that of the untrained, unscientific cultist or religionist. "The storm is up and all is on the hazard."

In all states the situation is as bad in one as another, and it is folly to contend that the pernicious legislation of one state is of no importance to the medical profession of another. The vicious attacks are not mere accident, nor are they local in scope. It is well known that the enemies of public health are well organized and active, reaching over the entire country, attacking the weaker spots and if there successful they have gained strength to strike elsewhere. The antivaccination clauses, which formed a part of legislation sought for in 1921 in Oregon and Washington, were couched in exactly the same words as the bill that had been rejected in California shortly before, and the same clauses appeared again in a bill introduced this year in Wisconsin, where it was defeated after a most intensive fight. Another pet measure which has made simultaneous appearance in many states is the proposal to open the hospitals to all comers, regardless of training and education. The antivivisectionists work in concerted action in the different states thru a strong central organization, and the chiropractors tax themselves heavily to maintain an expensive and alert machine.

The so-called basic-science bill which was defeated in Minnesota last winter, just such a bill as is so sadly needed in states which like ours have been extremely lax in letting down the bars, a bill which would simply require of all those licensed to practice the healing art a knowledge of anatomy, chemistry pathology and physiology, falied, we are informed, "because of the apathetic condition of the medical profession and the wrong method of presentation." The Chairman of the Legislative Committee of their state society did wonderful work but he could not bear the burden alone. That is exactly what would happen in Washington, were a similar bill to be introduced during the next session, did not the Public Health League stand sentinel over the favorable measures. Needless to say, the bill's most active opponents were the Palmer-punch-practors, who made weird and unique arguments against it. The average citizen, when the word "science" is mentioned, has an uneasy feeling that someone is trying to put something over on him, and what he does not understand he is prone to distrust. This phase of psychology was taken full advantage of by the practors.

The need of the Public Health League was never more urgent than right now, and the cost to the profession of its maintenance is little greater than under the old haphazard and unsystematic method of attempting to do justice to legislative problems without an organization or recognized representative, and when no steps were taken to defeat undesirable aspirants or to induce physicians to become legislaitve candidates. The difference is that the expense is more equitably distributed and we now have a 365-day a year working organization, alive to all matters affecting the public health, which has recently included in its membership, not only the dental profesion, but representative influential laymen from all parts of the state.

Dr. Ochsner, in his address of acceptance to Presidency of the Illinois State Medical Society, recently said: "Medical men, as well as others, can be divided into three classes: A comparatively large group, headed by a few indomitable spirits who work hard for the welfare of the whole, an equally large group who may be termed as slackers, and a comparatively small group, for whom we can scarcely find a suitable name, reactionaries, soreheads, tories being hardly strong enough terms." It is due to the fact that a majority of Washington physicians belong to the first class, that the League has been able to function so effectually; and it is believed that the time is near when those few members of the second class will join in insuring its continuation by giving their material and moral support. As for the third class, they simply don't exist in Washington; the climate isn't favorable to them.

OREGON

DR. WOODS HUTCHINSON AS OREGON RESIDENT

(Few physicians are so well known among the average people of our country as Dr. Woods Hutchinson, by reason of his popular writings on medical subjects and by appearance on the lecture platform. Probably many of our readers are not aware of his residence for several years in Portland and the part he played in public affairs of the State of Oregon. Accordingly the following article will be of interest, reproduced from the August issue of the League Bulletin, published by the Oregon League for the Conservation of Public Health—Editor.)

At a recent meeting of the State Health Officers' Association I spoke on the "Ancestry of the Public Health Question," particularly on ancestry of that question in Oregon, and incidentally referred to the fact that Dr. Woods Hutchinson was the first Public Health Officer of Oregon. It has since been suggested that I write a brief account of his connection with the board for the Bulletin, which is the motive of this contribution.

Dr. Woods Hutchinson came to Oregon about 1903. Prior to that time he had been professor of comparative pathology in a medical school in Des Moines, Iowa. From there he moved to Buffalo, where he was professor of comparative pathology in the medical school. From Buffalo he went to London and for several years was associated with the Zoological Gardens, doing work in comparative anatomy and Pathology. After a period of ill health he came to Oregon and visited with his sister who was a professor at Pacific College at Newberg. Within a short time he had the whole countryside interested in him.

He attracted the attention of Dr. Andrew C. Smith and others, who were on the State Board of Health and was appointed secretary. He served in this capacity for about two years and left to become medical director of Arrowhead Hot Springs, California. While in Oregon he attracted considerable attention from a Sunday supplement article which he wrote and which was well received. At Arrowhead Hot Springs he came in contact with various eastern publishers and wrote some of the first of the articles that have since made him famous.

Many regard his contributions to the Saturday Evening Post and to other magazines as the most helpful publications that are written today by any physician in the world, in that they are serving to bring the public closer in contact with the labors of the doctor than are the works of any other man.

While health officer of Oregon, Dr. Hutchinson went about the state actively. His greatest interest was, I think, in the septic tank and he caused many of these to be installed throughout the state, many of which are still in existence. His most successful works were in connection with school sanitation and the care of school children, which was noteworthy as pioneer work. He also traced epidemics of typhoid fever at various places along the Willamette River and contributed a paper on small pox which is still quoted and which is a classic.

He will be remembered not only for his work as health officer, but for the excitement which his activities invariably created and also for his marvelous ability as a public speaker, among dectors especially for his ability as an after dinner speaker. On several occasions he and Dr. Harry Lane talked at dinners, invariably filling their audience not only with wisdom but with humor. This phase of his labors could not however be regarded as hygienic or prophylactic. He may indeed be regarded as a disease provocator, for he and Harry Lane never spoke at the same meeting without, thru their combined efforts, exciting an epidemic of pleurodynia which few of their hearers escaped.

(W. H.)

* *

BOOK REVIEWS

Edited by KENELM WINSLOW, M. D.

Symptoms of Visceral Disease. A Study of the Vegetative Nervous System in its Relationship to Clinical Medicine. By Francis Marion Pottenger, A. M., M. D., LL. D., F. A. C. P. Medical Director, Pottenger Sanatarium, Menrevia, Cal., etc. Second Edition 357 pp., $5.50. C. V. Mosby Co., St. Louis, 1922.

This book considers the symphathetic nervous system in its practical relations to clinical medicine. It is a very important subject with the most far reaching consequences and one which we are only beginning to understand and to appreciate its enormous clinical value in respect to diagnosis. The author begins with a preliminayr anatomic and physiologic consideration of the vegetative nervous system, supplying the heart, the smooth muscles of the internal organs and vessels, and the secretary glands. This system he subdivides into the sympathetic, arising from the lumbar theracic portion of the cord; and the parasympathetic, derived from the midbrain and medulla, and sacral segments of the spinal cord.

Next the various reflexes which arise from stimulation of the afferent (sensory) sympathetics in internal organs are discussed. Broadly these reflexes result in sensory, moter nerves, stimulation of the sympathetics in internal organs caused thru the reflex circuit established in the spinal sensory or moter nerves, definite, superficial, localized areas of pain or spasm, or even atrophy of muscles. These superficial areas of pain, muscular spasm or atrophy are then described in detail for every internal organ. A very few of these are commonly known clinically, but they have a most important bearing in diagnosis, as for instance the pain and tenderness under the right scapula and in the right trapezius region in galllbladder trouble; or the girdle hyperesthesia in the region of the attachment of the diaphragm, and the pain in the neck, noted in diaphragmatic pleurisy.

The reviewer has seen faulty diagnoses with the most unhappy results, owing to ignorance of these visceral reflexes. In one case, in which visceral reflex from the liver was mistaken for myositis, the tonsils were removed when the patient was nearing the end from long chronic disease, and he died soon after this unfortunate error. We have become so accustomed to regard localized pain or tenderness as indicating the seat of trouble that it is difficult to realize that such symptoms, in relation to internal organs, depend upon the antomic embyologic and physiologic nerve circuits, or visceral reflexes, originating in the afferent sympathetics of the diseased organ, e. g., whatever the position of the appendix in the abdomen the natural place for the pain is in the right lower quadrant.

So there are many chapters devoted to the description of the symptoms caused by these viceral reflexes, corresponding to disease in the various thoracic and abdominal organs. In succeeding chapters the relations of the sympathetic reflexes to diseases of the blood vessels, salivary glands, nasal and pharyngeal membranes, the larynx, eye, urogenital tract and endocrine glands are narrated. The last chapters are given over to detailed anatomy and physiology of the vegetative system . The book possesses large scientific and practical value and combines high scholarly attainments with wide clinical experience and sagacity. We warmly commend it and Dr. Pottenger for his enviable achievement. When the able clinician sets forth as an investigator, his training stands him in good stead, as seen in the contributions of Sir James MacKensie and Rosenow.

Winslow.

Diagnostic Methods, Chemical, Bacteriological and Microscopical. A Text-book for Students and Practitioners. By Ralph W. Webster, M. D., Ph. D., Assistant Professor of Medical Jurisprudence in Rush Medical College, etc. Seventh Edition, Revised and Enlarged, with 37 Colored Plates and 172 other Illustrations. 909 pp. P. Blakiston's Son & Co. Philadelphia, 1923.

Having been associated in laboratory work with the author at the time the first edition of this volume was in preparation, the reviewer has perused the succeeding editions with more than ordinary interest. That the work is popular is attested by the short interval intervening between the publication of this, the seventh edition, and its predecessor, and this popularity is well deserved. The author has covered the subject with great thoroness, yet has avoided burdening the reader with needless subjects or methods. When two or more methods of examination are given, the advantages and short comings of each are outlined. Should a given method have proven satisfactory and dependable, it is so stated; and, on the other hand, when one must be on guard lest a false finding be attained, the source and means of elimination of the interfering substances are carefully portrayed. Tho essentially a chemist, the author's trend is toward the use of simple apparatus and methods, thus making the book especially helpful to the practitioner and others of limited laboratory equipment.

It is not a book of technic solely but, instead, a brief but thoro resumé is given of all objects and substances for which examination is outlined. For example, under albuminuria, in addition to albuminuria with renal lesions, a description of functional, alimentary, postural, febrile, traumatic, hematogenous, toxic and neurotic albuminurias is given, with a brief outline of the possible significance of each. This latest edition contains many recent advances in laboratory methods such as Kolmer's standardized quantitative Wassermann test, the urea concentration test of renal function, brine flotation for detection of ova in stools, and fractional method of Rehfuss for examination of stomach contents. The typography and illustrations are all that could be desired.

West

Practical Dietetics in Health and Disease. By Alida Frances Pattee. Fourteenth Edition. Completely Revised. A. F. Pattee, Mount Vernon, New York.

This well-known treatise, now in its fourteenth edition, is brought completely to date and comprises as practical and condensed a summary of diet in various disease as can anywhere be found. It has the assistance and endorsement of the leading medical men and the leading hospitals in the country and in it will be found the routine treatment followed by these authorities, as for example that of Joslin in diabetes, and Sippy in ulcer. The nephritic diets used by Christian in the Peter Bent Brigham Hospital are to be found. The reviewer has used the seventh edition for many years but, in view of the complete revision of the book, it would seem advisable that all interested in having a compact summary of present day diets should procure this excellent little compendium.

Winslow

The Tonsils. By Harry A. Barnes, M. D., Instructor in Laryngology, Harvard Medical School, etc. 45 Illustrations. 217 pp. $5.00 C. V. Mosby Co. St. Louis, 1923.

The compact and highly scientific production by this author under the same title of 1914 has been thoroly revised and brought down to date. It deals with the faucial, lingual and pharyngeal tonsils with respect to the general nature of lymphoid tissue, embryology, anatomy, histology, physiology, pathology and bacteriology. The technic of local anesthesia has received special attention. The chapter on focal infections has been rewritten and a chapter on treatment of hypertrophy of the tonsils and lymphoid tissue has been added.

Chase

Obstetrics for Nurses. By Charles B. Reed, M. D. Obstetrician to Wesley Memorial Hospital, Chicago. 144 Illustrations, with 2 Color Plates. 399 pp. $3.50. C. V. Mosby Company. St. Louis. 1923.

The author's reason for publishing this book is that none of the existent books seem to exhibit the fullness of information, conciseness of expression and emphasis due to certain subjects that he would hope to find. This volume presents a wealth of information for perusal of the nurse. The author emphasizes the danger attendant upon parturition and the necessity for the nurse to cooperate with the doctor and secure the confidence of the patient. The descriptions of normal and abnormal pregnancy are well presented. The mechanism of labor, together with complications, are clearly explained. Several chapters deal with the care of the child, together with the principles of infant feeding. There is a profusion of illustrations which help to elaborate the text. This is a very useful book for the obstetric nurse.

Cerebrospinal Fluid in Health and Disease. By Abraham Levinson, B.S., M.D. Associate in Pediatrics, Northwestern University Medical School, etc. With a Foreword by Ludvig Heptoen, M.D.

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267 pp. with 69 Illustrations, including five Color Plates. Second Edition, thoroughly revosed. $5.00. C. V. Mosby Co., St. Louis. 1923.

Devoted exclusively to the subject of cerebrospinal fluid, this work covers the subject very completely Diagnostically, we find the physical and chemical properties of both normal and pathologic fluid thoroly portrayed; also the cytology, immunology and Wassermann reaction. Bearing upon treatment, the origin of this fluid, rate of formation, rate of absorption, channels of absorption and permiability of the enveloping membrane are considered with thoroness. The permiability and absorptive rate of the retaining membrane to various substances is of especial interest. Type and illustrations are especially good.

West

Nursery Guide for Mothers and Nurses. By Louis W. Sauer, M. A., M. D. Senior Attending Pediatrician, Evanston Hospital, etc. Illustrated. 188 pp. $1.75. C. V. Mosby & Company. St. Louis. 1923.

This little volume contains instructive information for the mother and the care of her baby. The details concerning nursing and artificial feeding should be of material assistance, including preparation of various foods, with rules for feeding during different ages of the infant. A chapter is devoted to common illnesses with useful suggestions as to their treatment.

A Clinical Guide to Bedside Examination. By Drs. H. Elias, N. Jagic and A. Luger, of the Medical Clinic of the University of Vienna. Arranged and translated by Wm. A. Brams, M. D. Adjunct in Medicine, Michael Rees Hospital. 135 pp. Rebman Company. New York. 1923.

The authors state that this volume is presented with a view of furnishing the physician and student with a guide for physical examination at the bedside. A scheme of physical examination is given, every feature of which is subsequently elaborated. The advantage of a systematic method of procedure is readily appreciated. The reading and digestion of this little volume will serve to fix such a definite scheme in the mind of the reader.

The Surgical Clinics of North America. Chicago Number. Vol. III, No. 4. August, 1923. W. B. Saunders & Company. Philadelphia and London.

The contributors to this number include a large group of the distinguished surgeons of Chicago. The clinical reports cover a wide range of subjects. Among those considered are kidney stone, actinomycosis of the kidney, tumors of the kidney, repair of the common duct, technic of cholecystectomy, diagnosis of gallbladder disease. Among other conditions considered are diseases of the liver, stomach and intestines. Clinics covering these and many other subjects are dealt with.

The Medical Clinics of North America. (Issued serially, one number every other month.) Vol. VII, Number 2, September, 1923. (Chicago Number.) Octavo of 310 pages and 37 illustrations. Per clinic year (July 1923 to May 1924). Paper $12.00; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

Clinics reported in this number came from the leading physicians of Chicago. Pediatrics are reported as follows: Collapse in infancy and childhood, by Abt; infantile cerebral palsies, by Hamill; feeding of premature infants, by Grulee; chronic abdominal conditions in infancy and childhood, by Hess; infantile eczema, by Gerstley. There is group of clinics reported, dealing with gallbladder diseases, others treating kidney disorders, besides consideration of many other diseased conditions commonly observed in the practice of the average physician.

A Textook of Chemistry for Nurses. By Fredus N. Peters, A.M., Ph.D. Author of Experimental Chemistry, etc. Illustrated. Second Edition. 302 pp. $2.50. C. V. Mosby Company, St. Louis. 1923.

Altho this volume is prepared for the instruction of nurses, presenting the principles of chemistry in simple language and in an instructive manner, yet it furnishes profitable reading for the average physician who has become rusty on the fundamental facts of chemistry. Technical terms are largely avoided when possible, while at the same time facts are stated scientifically and truthfully. The book begins with the description of familiar substances such as water, hydrogen, the atmosphere, ogygen, common salt, etc. This leads up to the more complicated compounds with which one should be more or less familiar if he seeks to familiarize himself with the principles of chemistry. It is an instructive volume well worth the reading.

The Ophthalmic Year Book. Volume XIX. Containing bibliography, digests and indexes of the literature of ophthalmology for the year 1922. Edited by Edward Jackson and Wm. H. Crisp. Ophthalmic Publishing Company. Chicago. 1923.

The publication of this annual volume is resumed with this issue under its original title, which has been suspended since 1918, when it was merged with other publications to form the American Journal of Ophthalmology. This volume brings the references up to those included in the current literature for December, 1922. This should be a valuable volume of reference for all ophthalmologists.

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ORIGINAL CONTRIBUTIONS

ACIDOSIS IN INFANTS AND CHILDREN*

JULIUS H. HESS, M. D.
CHICAGO, ILL.

Acidosis is the term by which we refer to that condition, in which there is a diminution in the reserve supply of fixed bases in the body fluids and tissues. In order to insure its various functions the normal human body maintains a relatively definite degree of alkalinity in all of its fluids. That life may be sustained there must be an excess of bases. An acid, or even a neutral, reaction of these fluids is incompatible with life and, while the alkalinity may be reduced, the term "increased acidity" which has been frequently applied in the past is a misnomer. In health the degree of alkalinity is maintained with phenomenal constancy, in the presence of the continuous elaboration of acids such as carbonic, phosporic and sulphuric in the organism.

The defenses of the body against the development of a state of acidosis are, principally, pulmonary ventilation, excretion of acids by the renal tissues and the neutralization of acids by ammonia. When this mechanism is normal, a properly balanced alkaline reserve is maintained, due largely to the constancy of the bicarbonates in the blood, tissue juices and cells of the body. When acids are produced in great excess or their elimination is faulty, the normal preponderance of bases over acids is diminished and a state of acidosis prevails.

A sharp distinction must be drawn between acetonuria and acidosis. This is necessary because of the wide-spread confusion which has arisen in the interpretation of the relationship which acetonuria bears to acidosis. Acetonuria consists merely in the presence of acetone-bodies in the urine, and may or may not be accompanied by symptoms of acidosis.

Acetone bodies are frequently found in the urine of sick children, more especially in febrile diseases, and also in the presence of partial or complete starvation following anesthesia and numerous other conditions. When acetone is present in the urine, aceto-acetic acid is also found, as well as beta-oxybutyric acid, and usually in considerably larger quantities than the acetone. The misconception on this point arises because the nitroprussid test, which is ordinarily used for acetone, is in reality an extraordinary sensitive test for either acetone or aceto-acetic acid. The ferric chlorid test is a much less delicate one for aceto-acetic acid. The tests for beta-oxybutyric acid are less delicate still. When, therefore, it is said that the nitroprussid test shows acetone and the ferric chlorid test no aceto-acetic acid, it means that both are present but only in small amount and that beta-oxybutyric acid is present also. The presence of these acids in the urine, therefore, does not in themselves imply the existence of a state of acidosis. If, then, we relied on quantitative urinary tests, such as the notroprussid and the ferric chlorid and, when they were positive, made a diagnosis of acidosis, it would become one of the most frequent of children's diseases. Acidosis is, however, a common condition in infancy and childhood and it is of the greatest importance that it be recognized early in order to avoid serious consequences.

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* Read before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

It is evident that the urine examination alone gives insufficient evidence on which to base either a diagnosis or prognosis. It is only thru the development of *clinical symptoms* or by *laboratory tests,* such as those of the determination of the carbon dioxid tension of the alveolar air and the alkali reserve of the blood, that the relative excess of acid in the blood and tissues can be determined.

Symptoms. The onset is usually relatively insidious. An early and the most important sign is *hyperpnea,* characterized by deep, pauseless respiration. The rate is usually moderately increased as compared to the great increase in depth. It is both thoracic and abdominal, the great amplitude of the respiratory excursion causing considerable effort and often the accessory respiratory muscles are brought into action. This type of breathing is described as "air hunger" and is the minifestation of an effort to increase pulmonary ventilation. Eventually, in fatal cases, there is exhaustion of the respiratory center, the respirations become feebler with occasional deep gasps and finally cease. Because of the increased aeration of the blood, the lips and cheeks are often a bright, cherry red. Cyanosis is rarely present.

The sensorium is markedly affected. At first there is extreme restlessness and excitement; later apathy, drowsiness and stupor develops. Anhydremia frequently develops, manifested by sunken eyes, depressed fontanel and dry skin hanging in folds, more especially in the presence of repeated vomiting. The face is anxious and pinched. Diarrhea may accompany the acidosis. A "fruity" odor of the breath is sometimes present; this is characteristic of acetone body acidosis only. Dextrose alone, or in combination with lactose and galatose, may appear in the urine[1], in the particular form of acidosis occurring in anhydremia. The degree of leucocytosis and fever depends upon the accompanying disease. Hyperpnea without cyanosis is the only reliable and pathognomonic clinical symptom.

The various laboratory tests show an impending acidosis before any symptoms are manifest. *The laboratory tests* confirm the diagnosis. They give positive evidence of the presence or absence of acidosis, even inabsence of characteristic symptoms.

The determination of the carbon dioxide tension in the alveolar air is a relatively simple, bedside procedure, if the colorimetric method of Marriott[2] is used. In infancy the normal carbon dioxide alveolar air tension varies from 37 to 45 mm. Tensions between 30 and 35 mm. indicate a mild degree of acidosis, below 30 mm. a moderate, and below 25, a severe acidosis, and below 20 mm. an extreme acidosis[3].

More difficult but more accurate are the determinations of the bicarbonate content of the plasma by the Van Slyke method[4]. The amount of CO_2 given off is measured after strong acids are added to a certain volume of blood to liberate the CO_2. In infants the plasma contains 50 to 70 volumes per cent of combined CO_2. Adults have about 10 per cent more. In infants amounts less than 45 indicate acidosis. The results, if multiplied by 0.7, approximate alveolar carbon dioxide tension in millimeters, determined according to the method of Marriott. As mentioned previously, the excessive H ions stimulate respiration and the excessive acids in the blood decompose the carbonates so that CO_2 is blown off thru the lungs, lowering the amount combined in the blood. Consequently, this test indirectly measures the available alkali reserve of the blood.

Sellard's[5] test is to determine the alkali tolerance of the individual. Under normal circumstances the ingestion of small quantities of sodium bicarbonate by mouth increases the amount of this substance in the blood and the excess is rapidly excreted in the urine, causing the reaction of the urine to become amphoteric or alkaline to litmus temporarily. Marriott recommends the use of brom-cresol purple in 2 per cent alcohol solution; a drop or two of this solution is added to a small amount of urine in a test tube. This indicator changes from yellow to purple at about the normal reaction of the urine (PH_6). When the urine turns this indicator purple, it indicates that acidosis is not present, or that the acidosis has been corrected. If the indicator does not turn purple, it may or may not mean the presence of acidosis. This is a simple test which can easily be completed in the office. An alkaline reaction of the urine can be brought about in normal infants by administering 2 to 3 gm. of bicarbonate, and in older children and adults by 5 gm. Usually within an hour after administration this will change the indicator purple. In acidotic states four to ten times as much is necessary, because first the bicarbonate given must replenish the depleted alkali of the blood and tissues, before being excreted in the urine.

Tests for acetonuria only apply to certain special varieties of acidosis (acetone-body acidosis). The presence of such bodies is, however, not sufficient evidence when taken alone for diagnosis of acidosis; the reverse, however, holds true in that their absence does not exclude its presence.

Again, in special types of acidosis (increased production of organic acids or ingestion of strong mineral acids) there is an increased excretion of ammonia combined with these acids. Consequently, a quantitative estimation of the ammonia coefficient in the twenty-four hour urine is a valuable test for acidosis. It should, however, be remembered that in the presence of nephritis the ammonia excretion may be normal. The first three methods described are those most practical for routine clinical investigation.

Clinical Types. As previously stated, it is necessary to draw a distinct line between acetonuria and acidosis. Most of the studies of the past have dealt mainly with the acetone body acidosis. However, in the light of more recent experimental and clinical investigations the prominence of other acid bodies, such as acid phosphates, carbonic and lactic acid, has assumed a more prominent position as causative factors, either as distinct or mixed types of acidosis.

Children seem especially prone to develop the symptoms of acidosis. It may depend upon the smaller reserve of alkali which is characteristic of early life or upon the facility with which children manufacture acid bodies without any discoverable sufficient reason.

ACETONE BODY ACIDOSIS

Acidosis in the course of diabetes is a recognized representative of this type. Fortunately diabetes is a rare disease in children, altho a very fatal one. The development of hyperpnea and drowsiness, in the course of diabetes, indicates clinically that such an acidosis exists. A study of the CO_2 tension in the alveolar air and the bicarbonate reserve of the plasma should always be made with the first clinical or laboratory evidence of a beginning acidosis. As a prophylactic measure such tests should be made at regular intervals during the course of the disease. Acidosis of this type occurs in the presence of ileocolitis (bacillary dystentery), also at times at the onset of measles, scarlet fever and in the presence of respiratory infections. Other conditions, such as recurrent vomiting, acute infections and nutritional disturbances, which are commonly associated with acetone body acidosis, will be treated individually because of their clinical importance.

ACIDOSIS IN THE COURSE OF ACUTE INFECTIOUS DISEASES

Acute toxic conditions out of proportion to the seeming severity of the infection are frequently seen in the course of acute infectious diseases in young children. They are frequently due to the production of sufficient amounts of acid bodies to cause a definite acidosis. This increase in acid body production must be viewed in the light of an expression of the toxemia and not as the cause of the condition. The clinical picture may, however, be greatly influenced by the production of these substances.

ACUTE UPPER RESPIRATORY TRACT INFECTION ASSOCIATED WITH ACIDOSIS

For several years past we have been experiencing epidemics of acute upper respiratory infection, associated with evident inflammation of the tonsils, pharynx, nasopharynx and nasal mucous membranes, resulting in an injection and glazed appearance of the mucous membranes. It is frequently unaccompanied by follicular involvement of the tonsils. Nausea and vomiting are early manifestations and may disappear in one or two days, or in fatal cases persist thruout the course of the disease. Usually by the second day after the beginning of vomiting an acetone odor is noted in the breath. Many of the cases early show large amounts of acetone and diacetic acid in the urine. Not infrequently, however, the mild cases run their course without these latter findings.

Diarrhea is present in some of the cases and may be accompanied by marked evidence of intestinal fermentation. The majority of our cases, however, were associated with a flat abdomen and constipation. In the severe cases hyperpnea develops and may be the most marked of all of the symptoms. The children develop anhydremia, features are drawn, eyes sunken, skin becomes dry and loses its turgor, they become apathetic and later stuporous, and unless relieved develop profound coma.

The epidemics were usually seen during the winter and spring months, and more commonly affect children between the ages of one and six years. Younger infants, however, may develop this condition and it is not infrequently seen in the breast-fed. Physical examination in the absence of tympany usually reveals more or less rigidity of the abdominal muscles and an enlarged liver. In some of the severe types icterus may develop. Throat cultures, taken early in the course of the disease, have in most instances in my cases shown a short chain small streptococcus.

What relationship the acute infection in the pharynx bears to the clinical picture is undecided. In all probability it is due to general toxemia. However, the possibility of an acute gastritis, with secondary starvation, due to the inability to retain food, must not be overlooked as a possible secondary factor of importance.

A number of our cases were seen in children who had previously had a radical tonsil operation performed, so that they could not be related to pus infections of the tonsils themselves. Rachford[6], who has described these cases under the title of "Epidemic Acid Intoxication," has seen a large number of fatal cases. This has not been our experience in the Chicago epidemics, most of the cases running a comparatively short course of from two to six days, ending in a rapid convalescence.

PULMONARY AND CARDIAC DISEASES

In the pneumonias, empyema and bronchial asthma and other types of massive involvement of the pulmonary tissues, and in cardiac diseases associated with decompensation, carbon dioxide frequently accumulates in the blood in amounts in excess of the normal, resulting in a carbon dioxide acidosis. This leads to increased stimulation of the respiratory center, with resulting hyperpnea. The carbon dioxide tension in the alveolar air is diminished but, on account of the peculiar character of the acid causing the acidosis, there is no diminution in the alkali reserve. In some cases Howland and Marriott found that lactic acid was produced as a result of the partial asphyxia and in these cases a slight diminution in the alkali reserve was noted.

CHRONIC UPPER RESPIRATORY INFECTIONS

Sedgwick[7] directed attention to the surprising results obtained following removal of the tonsils and adenoids in some of his cases of recurrent or periodical vomiting. He found that not infrequently tonsilitis or rhinopharyngitis preceded the attacks. The possibility of focal infection should, therefore, be borne in mind in the recurrent types of vomiting associated with acidosis. The type of recurrent vomiting, probably a toxic neurosis which resembled migraine of later life in many of its clinical and laboratory findings and familial tendencies, should be given due consideration in an analysis of this group. There is usually a rapid and early production of acetone bodies during the course of the attacks. Starvation alone cannot account for their early presence.

ACIDOSIS ASSOCIATED WITH DIARRHEAL CONDITIONS

It has been shown by Howland and Marriott[8] and the work has been confirmed by Yllpo[9] and Schloss [10] that, in the diarrhea of infants accompanied by profuse watery stools (intoxication, cholera infantum, anhydremia, etc.), a severe acidosis may result. It is not present in all cases of diarrhea but may be a very serious and often fatal complication. The carbon dioxide tension of the alveolar air is low; frequently it sinks to 20 mm. or less, the alkali tolerance is much increased, the alkali reserve is greatly diminished and the hemoglobin dissociation curve is altered. Children suffering from this form of acidosis show, in addition to the other symptoms referable to diarrhea and anhydremia, hyperpnea and psychic changes.

The cause of this acidosis is not always evident, altho it is in all probability frequently influenced by an insufficient intake of food, starvation due to vomiting, anhydremia thru loss of fluids by vomiting and diarrhea, and excessive loss of bases thru the intestines and disturbances in carbohydrate metabolism may all be factors. Altho the acetone bodies are at times increased, they may be within normal limits. In a considerable number of cases the acid phosphate of the serum is increased. The anhydremia results in a diminished blood volume, with a secondary diminished blood flow, especially in the capillaries, which leads to a partial tissue asphyxia and increased lactic acid production (Marriott).

From our present knowledge we are led to believe that increased production and an insufficient elimination of acids is, therefore, largely responsible for the development of acidosis in the course of diarrheal conditions.

ACIDOSIS SECONDARY TO STARVATION

It is a well known fact that in partial starvation acetonuria is a frequent finding. The same is true when patients suffering from infections are underfed. The presence of acetone in these cases does not signify that they must necessarily be in a state of acidosis.

Veeder[11], as a part of a general study of acetone body acidosis in childhood, made a number of experiments to obtain figures of the degree of acetonuria resulting from inanition. He believes that there is but little increased output of acetone bodies during a period of twenty-four hours inanition in a *healthy* child. In cases in which inanition was terminated at the end of twenty-four hours, there was a continued increased elimination of acetone on the following day, which in some instances was greater than the amount eliminated on the day of the inanition. This fell rapidly, so that by the third day normal figures were again obtained.

In the remaining cases the inanition period was continued for a second twenty-four hours before the child was placed on the original diet. A rapid increase in acetone elimination took place during the second twenty-four hours.

Gamble and his coworkers[12], using as subjects epileptic children who were being fasted as a therapeutic measure, undertook to determine the extent to which the reduction of the plasma bicarbonate during fasting is due (1) to depletion of the inorganic base of the plasma, and (2) to the concentration of ketone acids developing in the plasma. It was found that the total inorganic base concentration was during fasting accurately sustained at its usual average value. The reduction of bicarbonate was thus apparently due entirely to the concentration of abnormal organic acids in the plasma. This inference was sustained by direct measurements of the concentration of ketone acids in the plasma. It was also found that small amounts of sucrose by mouth brought about a restoration of the bicarbonate concentration to the normal. From these data it is inferred that glucose rather than bicarbonate is the logical agent in the treatment in nondiabetic ketosis.

Abt[13] has described a series of cases of acid intoxication occurring in infants previously healthy, at about the weaning period. In one family two children had previously died from this affection, the case described being the third infant born to this family. W. F. Orr had reported a series of five children in the same family who died with symptoms similar to those described by Abt. The illness usually occurs in large, robust, previously healthy infants; in some cases the infants had shown a stationary weight curve before the onset. As in some of his cases, I have seen three cases occurring in infants who suddenly weaned themselves because of dissatisfaction with the food from the breast, following which they also declined to take sufficient artificial food. As several of our cases have occurred before the close of the period of lactation, the question arises as to whether the insufficient breast milk supply may not have led to partial inanition which became acute with spontaneous refusal of artificial food, resulting in complete starvation. I believe every baby should be taught early in life to drink from a cup or bottle in order to prepare it for a sudden stopping of the breast milk supply. The possibility of infection as a precipitating factor must, however, not be overlooked.

POSTOPERATIVE ACIDOSIS

Morriss[14] found that the capacity of the plasma for combining with the carbon dioxide is decreased after ether and chloroform anesthesia; in other words, one influence of the anesthetic is toward depletion of the alkali reserve.

Jeans[15] found that the acetone bodies of the blood were somewhat increased after operation in about two-thirds of the children studied, the maximum amount being found in most instances about twenty-four hours after operation. The plasma carbonate was reduced in about two-thirds of the cases, the greatest reduction occurring in most instances about twenty-four hours after operation. When more closely compared there was found to be no close relation between the increase of acetone bodies and the reduction of plasma carbonate. In most instances, especially in those cases in which the plasma carbonate was much reduced, the acetone bodies were entirely inadequate to account for the degree of reduction of plasma carbonate. The undetermined acid factor was apparently of much greater importance than the acetone bodies in the reduction of reserve alkali. The starvation incident to operation seems to play no part in the production of this undetermined factor.

ACIDOSIS OF RENAL ORIGIN

The ability of the kidneys to excrete acid, especially acid phosphate, is one of the chief defensive mechanisms of the body. Failure of this mechanism, even without increased production of acids, results in acidosis. Occasionally in nephritis acidosis occurs and Howland and Marriott[16] have shown that when acidosis is present there is an accumulation of unexcreted phosphate in the blood plasma. There is no evidence that any abnormal acid is produced. In these cases of acidosis, where hyperpnea is present, the CO_2 tension in the alveolar air is lower than normal, the alkali reserve of the blood is depleted, and there is an increased "alkali tolerance." No acetone bodies are to be detected in the urine and the ammonia excretion is normal or diminished. Failure to produce ammonia to neutralize the retained acid is an additional factor in the production of the acidosis of nephritis, and represents a weakening of the body's defenses.

PROGNOSIS

The prognosis varies with the precipitating etiologic factors, the severity of the acidosis and upon the underlying constitutional conditions. The result obtained is dependent, first, upon our success in the removal of exciting factors; second, the overcoming of the intoxication; and, third, so far as possible, the relieving, or when possible, the removal of the underlying factors. The early relief of starvation by the institution of the proper diet, counteraction of infection, and the neutralization of the acetone bodies, are all that is usually necessary in the mild types secondary to starvation and infection. In children suffering from recurrent vomiting, sources of focal infection should be removed. In the acute types associated with diarrhea the prognosis is grave. Diabetes and chronic nephritis must always be reckoned with as extremely serious factors. In cases of acute nephritis of moderate severity the prognosis is better.

The possibility of confusing an early tuberculous meningitis with epidemic acidosis must not be overlooked.

TREATMENT

The treatment of acidosis must first be directed to the prevention of a further production of more acids; second, to replenishing the alkali reserve; third, to the elimination of the acids and their salts; and, fourth, to the treatment of the underlying factors, whether they be acute infections, starvation or organic diseases.

Water Administration. Large quantities of water should be administered by mouth, if it is tolerated. When not retained, subcutaneous or intraperitoneal administration of normal saline or Ringer's solution is to be recommended, the latter as often as every six hours, if necessary, during the early treatment. The total quantity of all fluids given should be recorded daily and every effort made to administer maximum quantities.

In the presence of nondiabetic *acetone body acidosis,* glucose should be given in all cases. I will not attempt to discuss diabetitic acidosis, the treatment of which has undergone such a great change since the development of insulin therapy. Three methods of administration are available: by mouth, rectum, or intravenously. By *mouth,* a 5 to 10 per cent solution may be administered every two to four hours, in quantities depending upon the age of the child and the tolerance of the gastrointestinal tract. By *rectum,* a 5 per cent solution is best employed, which may be administered intermittently at intervals of three or four hours, quantities varying from 60 to 120 c.c. (two to four ounces) being used, or in young infants and older children who are not too restless the drip method may be used. When there is a tendency to return the glucose solution, it may be necessary to compress the buttocks for at least one-half hour after each administration.

A careful record should be kept of all solutions administered by this method and so far as possible the retained fluid estimated. In most cases a liter can be administered in the course of twenty-four hours. For *intravenous* use, 5 or 10 per cent of glucose in Ringer's or normal saline solution may be used, depending upon the size of the child. From 60 c.c. in small infants, to 300 c.c. in older children, may be injected at one time, to be repeated as indicated.

Intraperitoneal Injection. For this purpose normal saline or Ringer's solution may be used. Fifty to 500 c.c. may be administered by the gravity method. Glucose should not be administered intraperitoneally.

Alkali Therapy. Alkalies are given a secondary place in the therapy of acidosis, due to concentration of ketone acids in young children, and this agrees with the more recent experiences of Marriott[17] Gamble[18] and Schloss[19]. Glucose rather than bicarbonate is the prime agent in the treatment of nondiabetic ketosis. The same is true of the lactic acid type. Marriott found that, when sodium bicarbonate is given, the amounts of sodium and sodium ions in the blood are increased and this increase disturbs the balance between the sodium, calcium and magnesium ions. If administered, sodium bicarbonate should be given by mouth or intravenously. By mouth from 1 to 2 gm. may be given at four-hour intervals, dissolved in water. For intravenous use a 2 per cent solution is best employed, as it is isotonic with the blood. The same amounts of solution can be administered intravenously as recommended for the administration of glucose.

Howland and Marriott found that the simplest indications that sufficient alkali has been administered is evidenced by shifting of the reaction of the urine to normal. When it becomes amphoteric or alkaline to litmus, we may consider that a slight excess has been given. Further administration should then be withheld, unless the urine again becomes more acid than normal. When the carbon dioxide tension of the alveolar air is above 30, recovery is usually spontaneous and soda is unnecessary. Edema, tetany and even convulsions have been noted following the administration of large doses of soda, more especially in young infants. These usually disappear with cessation of the soda medication.

Diet. While the administration of glucose as recommended may carry the patient over the first emergency period, insufficient amounts of carbohydrate are given in this way to meet its needs. Efforts should, therefore, be directed toward the further administration of carbohydrates by mouth as soon as the condition of the stomach permits. After a short period of rest, the time of which will be indicated by the ability of the stomach to retain inert fluids, which in most instances is not over six to twelve hours, further administration of sugars and cereals should be begun.

Thick cereal pastes, to which cane sugar or maltose dextrose compounds have been added, are usually best retained. They may be given in small quantities at two-hour intervals, or at longer intervals with the administration of corn or maple syrup, or honey in teaspoonful or larger amounts. Malted milk is often well taken. Milk chocolate and plain candy, such as caramels, are valuable and are usually well taken by children who have eaten them previously and have a liking for them. Various plain wafers sold on the market may be tried on the second day. Fruit juices sweetened and sirups, more especially orange juice, should be given in small quantities. If orange juice is retained, larger quantities diluted with sweetened water should be given and continued. Often one or more oranges can be fed in twenty-four hours during the first day after vomiting ceases. Skim milk, or better skim buttermilk, can usually be given by the third day. Whole milk and fats should be withheld until the child is convalescent.

The feeding of carbohydrates should be pushed as a preventive measure in the presence of acute infections.

Medical Treatment. The acute symptoms requiring further medication are gastric and intestinal distention and the retention of decomposing food in the intestinal tract, vomiting and syncope.

To clear the intestinal tract milk of magnesia or some other mild saline laxatie, together with enemata, are best. For vomiting in the presence of gastric distention lavage with a weak bicarbonate or citrate solution is often most beneficial. Small doses of carbolic acid (1-8 to 1-4 minim), administered at two-hour intervals for three or four doses, together with tincture opii camphorata for the relief of vomiting and restlessness, are indicated. In the presence of syncope it may be necessary to administer cardiac and respiratory stimulants.

Blood Transfusion. In extreme cases of so-called epidemic acidosis, blood transfusion has, in the limited number of cases in which we have had occasion to resort to this measure, yielded striking results.

The indicated treatment for underlying chronic respiratory, cardiac and renal conditions if present must be instituted, following the subsidence of acute symptoms.

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THYMUS GLAND ENLARGEMENT IN INFANTS *

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Hyperplasia of the thymus gland in infants occurs much more often than is ordinarily supposed. Pediatric journals have frequently reported advancement in both the diagnosis and treatment of this fairly common lesion, but the information has not reached the majority of physicians. The frequency with which this lesion may cause symptoms is indicated by our having found it to be the cause of such symptoms in twenty infants during the past year and a half. This relatively large number of cases resulted from a study of our routine history and examination, and not because we were especially interested in this lesion.

HISTORICAL

Friedlander, in .1907, first treated an enlarged thymus by the roentgen-ray. Benjamin and Lange found evidence of an enlarged thymus gland in 8.4 per cent of new cases seen in one year's time and treated these cases with the roentgen-ray (1918)[1]. Gerstenberger submitted radiographic findings to indicate that a normal appearing thymic shadow might be obtained at the end of deep inspiration, and an abnormally enlarged thymic shadow at the end of forced expiration; he suggested that the fluroscope be used to confirm the radiographs[2]. He concluded that the change in the shadows resulted from the rise and fall of the diaphragm. In 1921, Noback determined from a study of necropsies on a large number of fetuses and full term children that the thymus in the stillborn differed in its location, form, and relation to the heart and lungs from the thymus in the live born; he concluded that these changes were the result of the establishment of respiration[3]. At the same time Blackfan further emphasized the ease and accuracy of percussion in determining an enlarged thymus gland when compared to the subsequent radiograph[4].

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ETIOLOGY

Thymic enlargement causes symptoms in a large number of infants. One observer found in a series of sixty infants who had no symptoms referable to this gland that approximately 50 per cent showed an enlargement by radiograph, and in the majority of these cases he first determined increased dulness on percussion. In addition, after a single therapeutic roentgen-ray exposure a diminution in the size of the thymic shadow was determined one week later.

In every one of the cases in our series the mother or nurse voluntarily and repeatedly described symptoms that could be explained by thymic enlargement. Fifteen of the twenty cases were in females. The youngest infant at time of diagnosis and treatment was two days of age, and the oldest was six months of age. The average age was two months.

It is interesting to note some of the associated symptoms and physical findings. One patient had a congenital heart lesion, pyloric stenosis and bilateral undescended testicles. That infant, as well as two other patients who had severe pylorospasm, was fed on thick cereal instead of ordinary liquid milk feedings. Four other patients presented extremely difficult feeding problems over a long period of time, persistently failing to become comfortable or show a consistent satisfactory gain in weight. Those patients now show, after months of relief from symptoms referable to the thymus, a tendency to lymphoid tissue enlargement elsewhere in the body; the tonsils are greatly hypertrophied, and are frequently affected by recurrent acute inflammations, often associated with marked cervical adenitis.

TOPOGRAPHIC ANATOMY[3]

The thymus may consist of one, two, or three lobes; the lobular markings may be indistinct. It is bilobed in about eighty per cent of the cases.

In an infant who has breathed its position is usually cervicothoracic: the right lung always, and the left usually overlap it. The right portion of the gland extends over the right ventricle of the heart in the majority and the left portion in practically all of the cases. In form, the elongate type predominates over the broad type.

The thymus is compressed laterally and anteroposteriorly by expansion of the lungs, and bears the impression of the organs with which it is in contact. In infants the left side of the normal thymus is ordinarily wider than the right, probably because with respiration the right lung more nearly approaches the middle line and exerts more compression. Respiratory compression might explain the difference in the width of thymic shadow with inspiration and expiration. It has been suggested that the apparent size of an infant's thymus gland is dependent more upon the degree of the expansion of the lungs than upon the actual size of the gland.

Evidences of compression are occasionally seen by changes in course, reduction of lumen, dilatation, and displacements of the great vessels, trachea and esophagus.

SYMPTOMS

Symptoms from an enlarged thymus are usually first noted during the first three weeks of life. In most instances these symptoms are mild but persistent, and the physician pays but scant attention to the mother's complaints, even after reiteration and her refusal to accept such explanations as "cold," or "mucus in throat," to explain the infant's respiratory difficulties.

On the other hand, the symptoms may be acute and severe. They are then commonly characterized by alarming and frequently repeated attacks of deep cyanosis, usually coming on during the night.

The mother may endeavor to explain the symptoms by stating that the infant has had a "sore throat" for some time. To her, the breathing may be wheezing or choking in character and become aggravated with and after nursing, and also during the night. On examination an inspiratory stridor is found in contradistinction to the prolonged expiratory dyspnea of asthma.

Many of the infants are surprisingly well nourished and developed, and are brought to the physician only because of these symptoms. The roentgenologists, as well as ourselves, frequently remarked upon the short fat neck, characteristic of so many of these infants.

Careful faint, light, chest percussion will often give surprisingly accurate findings. Percussion should be begun well out upon the chest. The physician soon realizes that he obtains better and more accurate information from the associated tactile sense of resistance. In fact, his accuracy may occasionally make it possible for him to predict to the roentgenologist not only that the thymus is enlarged, but that the enlargement is greater on one side than on the other. It is easier to outline the lateral limit of the gland than the lower. It seemed sufficient for us to consider a thymus gland enlarged on percussion, if the dulness extended any appreciable distance beyond the sternum in the second interspace and merged below wth heart dulness.

In all patients presenting symptoms referable to an enlarged thymus but without any findings on percussion, a radiograph was nevertheless made. It is our opinion that this is the only confirmatory means of diagnosis. Preliminary percussion in our series gave negative findings in five cases, suspicious in seven, and definite findings in eight cases. Naturally, in the ordinary routine examination of all cases we find percussory evidence of an enlarged thymus gland in many infants who do not have symptoms. These patients have not been subjected to the expense of radiologic examinations and treatment. It is our opinion that a thymus is pathologically enlarged only when it causes symptoms.

Each patient was first fluoroscoped. In this way it was possible to determine roughly the presence or absence of thymic enlargement. The size of the gland was indefinite because the shadow varied in size with respiration. However, it was not observed that deep inspiration caused complete disappearance of the shadow in any of the cases.

The plates showed thymic shadows of fairly constant size. The shadow was described as large in thirteen cases, moderately large in six cases, and slightly enlarged in only one case. The severity of the symptoms was not in proportion to the apparent size of the gland.

Many of the infants were most comfortable when lying with their heads retracted. This position was assumed more often in sleep than during the waking hours. With relief of symptoms from x-ray treatment this position was assumed less often and to a lesser degree. The probable reason for this position is that in it the anteroposterior diameter of the upper thorax is increased and the thymus is given more room for expansion.

The following abstracts of our cases show a remarkable similarity of symptoms in all but one of doubtful diagnosis.

Case 1. D. J., 2 months old. Wheezing and "noise in throat" had been present since birth.

Case 2. E. M., 5 weeks of age. "Sore throat" had been observed for three weeks and difficult breathing had occurred at times. Infant improved after treatment, but was seen at nine months of age with tonsillar hypertrophy, scar from incised cervical gland, and inspiratory stridor. The thymus had persisted, and was again treated.

Case 3. L. H., 3½ months of age. "Hard breathing" had been noted since birth. Child improved in one week. Pylorospasm was associated. No complaint made at six months of age.

Case 4. D. H., 7 weeks of age. Difficult and noisy breathing was present for weeks. Atelectatic consolidation was associated. No improvement noted after five weeks. No complaint made after two months.

Case 5. F. M., 6 weeks of age. Cough, wheezing, and difficult nocturnal breathing had been observed since three weeks of age. The infant was a difficult feeding case. "Colds" did not recur until development of hypertrophied tonsils at six months of age. Adenectomy advised at ten months and tonsillectomy at fourteen months.

Case 6. T. S., 3 months of age. "Crowing" sound on crying had been noted at times and was heard rarely after treatment.

Case 7. G. L., 3 months of age. Frequent choking, inability to hold head up, and the head retracted in sleep, had been present for some time. Crowing sounds were heard at times each day. Crowing disappeared in few days, head was controlled at two weeks, and choking occurred rarely when lying on back. Retreated because of choking.

Case 8. B. S., 4 weeks of age. Difficult breathing and attacks of cyanosis had been alarming since birth. Cough was present after one week of age. Infant was premature. Death occurred three days after treatment. This infant had combined atelectasis and enlarged thymus gland.

Case 9. M. H., 8 weeks of age. Attacks of cyanosis occurred on two successive nights in sleep. Resuscitation was difficult. Pylorospasm was associated. Respirations were characterized by prolonged expirations with pronounced downward head movement. Infant had a severe attack after treatment and one slight cyanotic attack nineteen days lter. No radiographic evidence of thymic enlargement was seen twenty-six days after treatment.

Case 10. V. S., 2 months of age. Choking spells were frequent at night. The symptoms disappeared completely ten days after treatment. Family physician was suspicious of cretinism at sixteen months of age.

Case 11 N. L., 6 months of age. Chronic "cold" and cough were noted since four weeks of age. Wheezing respirations and expiratory dyspnea with asthmatic rales were found at time of examination. Breathing was easier and the cough had disappeared six days after treatment. A severe attack of cyanosis followed the treatment. Infant had one asthmatic attack during the three months following treatment.

Case 12. G. S., 4 months of age. This was a highly neurotic infant of bad heredity, who had been having frequent inexplainable convulsions. A slight thymic enlargement was found and treated. Temporary coincidental relief followed. Convulsions recurred with each febrile illness.

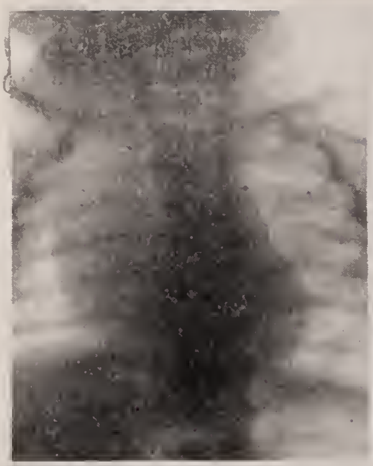

FIG. 1

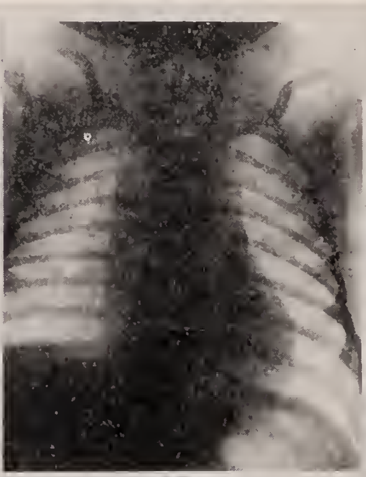

FIG. 2

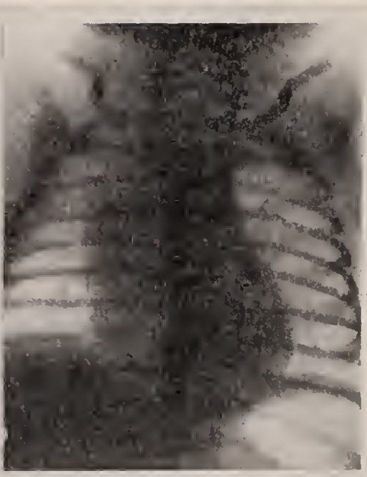

FIG. 3

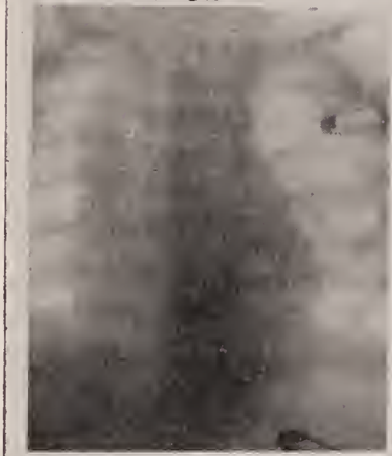

FIG. 4

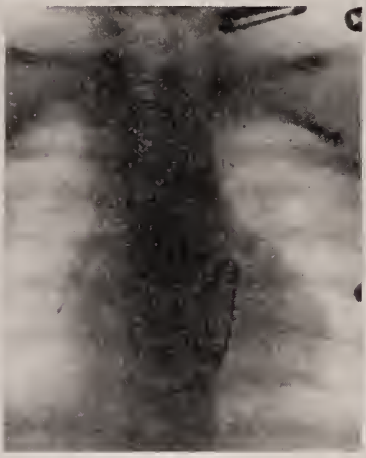

FIG. 5

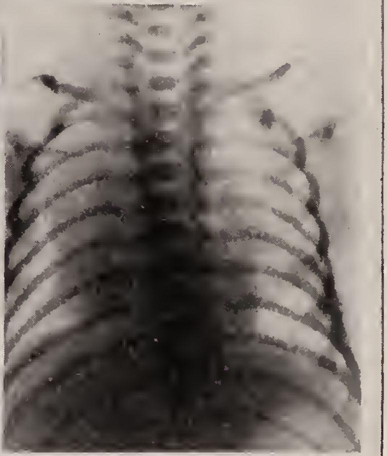

FIG. 6

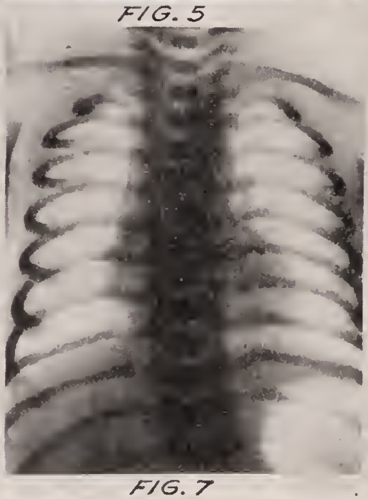

FIG. 7

Fig. 1, Case 1. Shows thymic shadow of wide extent.

Fig. 3. Case 8. Greatly enlarged shadow. Also shows some lateral deviation of spine.

Fig. 3. Case 8. Greatly enlarged thymic shadow. Taken at same time as Fig. 2. Note marked difference in the two shadows. It is difficult to explain this difference in size of shadows by the spine deviation alone. It seems possible that some of the difference may be explained by expiration and inspiration.

Fig. 4, Case 10. Shows enlarged thymic shadow with lobulation.

Fig. 5, Case 10. Shows marked decrease in thymic shadow (one month later).

Fig. 6, Case 13. Infant two days of age. Note wide thymic shadow.

Fig. 7, Case 13. Six days later, after x-ray treatment. Thymic shadow is greatly lessened.

Case 13. B. T., 2 days of age. Cesarian birth. Cyanotic attacks occurred at one and one-half days of life. They were relieved by placing the infant in an upright position. The infant appeared normal between attacks. No symptoms were observed 24 hours after treatment.

Case 14. A. R., 9 weeks of age. Persistent slight cough had not improved since home from hospital. Asphyxia neonatorum was severe. Feeble cry, cyanotic attacks, and laboured respirations followed the asphyxia until three days of age. Blood in spinal fluid found at three and one-half hours of life. Reaction occurred after x-ray treatment. The breathing was normal in a week. A slight cough persisted until fourteen days later, when thymus was retreated. In this case the birth injury clouded the enlarged thymus.

Case 15. J. F., 3 months of age. Choking spells had alarmed the mother since birth and were even becoming more severe. Pyloric stenosis, congenital heart murmur, and congenital bilateral undescended testicles were associated. No choking spells occurred after first treatment. Thymic shadow had same appearance at end of four months, due to enlarged heart shadow from congenital defect.

Case 16. W. V., 5 weeks of age. Hoarse cry and wheezing respirations had been present many days. Apthous stomatitis was associated. No thymus enlargement and only occasional wheezing were found at end of three weeks after treatment. The hoarse cry disappeared with disappearance of stomatitis

Case 17. W. B., 4 weeks of age. Severe choking spells with cyanosis were present since birth. The infant made "crowing noise" on nursing and crying. He slept with head retracted. He choked only one time in the three weeks following treatment.

Case 18. G. H., 4 months of age. Cough and mucus in throat had been present since seven weeks of age. Infant choked at night. No improvement occurred in ten days. Retreated. No choking noted after three days except with severe crying. Cough persisted one week after last treatment.

Case 19. S. J. B., 2½ months. Cough and noisy breathing had been present for preceding ten days. Short rapid respirations with respiratory stridor were associated. Stridor was pronounced after eating and in early morning. Head was kept retracted. All symptoms were relieved at end of two days. Stridor was present but to a less degree one week later. Retreated.

Case 20. H. H., 4 months. Mucus in throat and frequent choking since birth had been noted by the mother. She was advised to ignore these symptoms as they would disappear. An enormous thymus gland was found. Some improvement occurred during the next three weeks, when thymus was retreated.

COURSE

Relief from symptoms is often noticed as soon as forty-eight hours after treatment, and then progressively continues. A reaction is observed in many cases the first day after treatment. This is characterized by great restlessness, some loss of appetite and the vomiting of a great deal of mucus. In those infants treated because of the cyanotic attacks it is characteristic for them to experience their most severe attack the night after the first treatment; from then on the attacks either do not reappear or are progressively milder. It is difficult to explain these reactions except by an initial hyperemia of the gland resulting from the treatment.

A second radiograph was taken in many of our cases all the way from a few days to several weeks later. Each plate showed varying grades in the diminution of the shadow. The criterion of cure is considered to be relief or absence of symptoms rather than persistence of gland enlargement. Only five infants required a second treatment after the second radiograph to obtain sufficient relief.

With but one exception it was possible to follow up all the cases. In two instances congenital atelectasis was associated. It may be that the atelectasis was really responsible for the thymic enlargement by reason of deficient lung pressure on the gland.

More gratefulness and appreciation are expressed to the pediatrist by the joyful mother after the treatment of this condition in her infant than for most any other medical service he can render. For weeks she has worried about these strange alarming symptoms that she has found so difficult to express to her physician and for which she has obtained no relief but only the assurance that there is nothing to worry about. The rapid relief of symptoms following the first treatment usually completely relieves her anxiety.

DIAGNOSIS

The direct diagnosis consists in finding in an infant with persistent or aggravated respiratory symptoms from the first few weeks of life, the evidence of an enlarged thymus gland by percussion, its confirmation by fluroscopy and radiogram, and its diminution with relief of symptoms after an x-ray treatment. A second roentgenogram is confirmatory of this decrease in size of the thymus gland.

Congenital laryngeal stridor, heart murmur and atelectasis must be considered in the differential diagnosis.

PROGNOSIS

Sudden unexplainable death or sudden death from any intercurrent acute infection has not occured in any of these infants. Before x-ray treatment most of these infants were so susceptible to "colds" that they were considered to be chronic in nature. After this treatment the tendency to "colds" disappeared with the other symptoms.

TREATMENT

For a description of the x-ray technic I am indebted to Drs. Ward and Betts.

The infant is first fluoroscoped to determine the presence or absence of an enlarged thymus. A roentgenogram is then made with the infant on his back and with the body straight, so that the vertebral column is kept in midline. The arms are held by the side and the head is slightly retracted. Because of the infant's resistance it is often difficult to maintain this position and to obtain a plate that does not show some deviation of the spine from the midline. Three to six plates are made on each case. The plates in which the spine is somewhat deviated do not have the clear cut appearance shown in those plates with the spine in midline, but the thymus is distinct and its enlargement almost as definite in one as in the other.

The shadow, when considered as enlarged, is so wide that the diagnosis is easily evident, even with the spine deviated. The plate is taken at a distance of thirty inches to overcome the exaggeration of shadows resulting in a film taken with a patient on his back; a large shadow is obtained, but the thymus maintains its same proportionate and comparative size to the other chest shadows.

For the actual treatment the infant is kept in the same position and the feet are restrained by a sand bag. A target-skin distance of 9 inches, spark gap of 7 inches, 5 milliamperes and 3 m.m. aluminum filter are used, and the treatment extends over a period of five minutes, with the ray directed over the thymic area. This is a comparatively small x-ray dose but, because of the limited knowledge of end-results if complete atropy should suddenly occur, it was thought best by the roentgenologists to be content with the smallest possible dosage that would relieve symptoms.

Cases respond to this treatment in a progressive manner so encouragingly that a second treatment is not usually given at weekly intervals, as ordinarily recommended, but the interval is extended to a month, unless the symptoms are too urgent. In this way surprisingly few cases need a second treatment.

COMMENT

The condition of thymus enlargement presents many varied questions and problems. Are the symptoms the result of pressure alone or from some internal change or factor in the gland itself? If the thymus is a gland of important secretion or function, why is it that some change is not observed in these infants as the result of x-ray treatment? If the thymus has some postnatal influence on mental or physical development, why do we not find some mental or physical deterioration after its shrinkage by x-ray treatment? Would sudden death have resulted in some of these infants, if they had not been treated? In an infant with status thymolymphaticus can sudden death be prevented by x-ray treatment of the thymus alone, even tho the characteristic lymphatic hyperplasia elsewhere in the body persists? Is it not possible to explain some chronic "colds" in older children, persisting after removal of tonsils and adenoids, by an enlarged thymus? It is also conceivable that an infant may have symptoms from an enlarged thymus that does not show in the x-ray plate by reason of the enlargement being anteroposteriorly rather than laterally. Finally, would it not be advisable to give all infants with these symptoms a prophylactic x-ray treatment, regardless of the apparent size of the gland as shown on the plate?

CONCLUSIONS

1. An enlarged thymus gland in infants occurs frequently and causes symptoms. Twenty cases have been seen by my associate, Dr. P. D. McCornack, and myself in the past one and one-half years of private pediatric practice.
2. The symptoms are noted by the mother, and are usually mild but persist or recur with exacerbations.
3. Choking spells, especially after nursing and during the night, are the predominating symptoms.
4. Severe acute attacks of deep cyanosis may be the only complaint.
5. A persistent "cold" in an infant, beginning shortly after birth, is indicative of this condition.
6. Percussion of the chest often gives surprisingly accurate information as to the presence and lateral extent of the gland.
7. The direct diagnosis depends on fluoroscopy and the radiogram.
8. One x-ray treatment is usually sufficient to relieve the symptoms and cause atrophy in the thymus.

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DIAGNOSIS AND TREATMENT OF ENLARGED THYMUS IN CHILDREN WITH REPORT OF CASES *

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The demonstration of an enlarged thymus is the keystone in the diagnosis of the complex condition known as status lymphaticus. As to the function of the thymus and the manner in which the enlargement of the gland is associated with thymic asthma and sudden death, there are many views for, as Sajou remarks, "the thymus has been the graveyard of many hypotheses." Some have suggested that the symptoms are due to pressure on trachea, nerves and vessels, others attribute the symptoms to a specific substance elaborated by the gland, and still others suggest a gland deficient in special substances.

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In relation to function it is interesting to consider the views of Hammar who has made an intensive study of the thymus for over twenty years. He says that "the Hassall corpuscles seem to represent the essential functional changes, and form the morphologic expression of antitoxic activity. He regards none of the evidence of internal secretion as conclusive and thinks all the changes that have been observed after thymectomy can be explained as the result of injuries of a toxic nature, which are neutralized in the intact animal. His research has demonstrated that the thymus is not a transitory organ but functions up to old age. At puberty its parenchyma begins to be reduced, but the involution does not check the antitoxic action of the thymus."

Sajous in his latest edition emphasizes the relationship of the thymus to phosphorus metabolism and thinks that, when the thymic function is inhibited, there is a pathogenic connection with such disorders as rickets, retarded growth, idiocy, etc. He quotes Morel, who observed that 75 per cent of 408 nonmyxedematous idiotic children, ranging from one to five years, examined postmortem from 1890 to 1903, showed absence of the thymus. Katz performed autopsies in 61 mentally normal children from one month to thirteen years who died of various diseases. In all of these the thymus was present and, conversely, in 29 mentally weak children examined postmortem by Bourneville the thymus was absent. Basch, Klose, Vogt and Morel have observed mental disorders in puppies after thymectomy.

However, an enlarged thymus is apparently not an infrequent accompaniment of Mongolian idiocy. Greenthal[1] points out the frequency of enlarged thymus in infants and children with congenital defects, such as hare lip, cleft palate, spina bifida, club feet. He agrees with Blackfan and Little[2] that the statement that thymic enlargement is most frequently found in well nourished children is not borne out by fact. An enlarged thymus is not infrequent in the badly nourished, and Blackfan and Little consider that there is no relationship between the state of nutrition, specific diseases or infections, and the shadow cast with roentgen rays.

One can conservatively assume from the foregoing that the function of the thymus forms an important but not clearly understood role in the human machinery, and that either absence or pathologic enlargement produces serious disturbances. The terrible suddenness of what is termed "thymus death" is so appalling, and the constant association of an enlarged thymus with this condition is so suggestive, that we are justified in concentrating our efforts on the demonstration of an enlarged thymus and its reduction by treatment.

One of the first things to be decided is just what constitutes an enlarged thymus. On this, as on other points connected with this gland, there is a great variety of opinion. At birth the weight is given variously as (Testut) 5 gm.; (Thursfield) 6.7 gm.; (Friedleben) 12 gm.; (Bovaird and Nicoll) 7.7 gm. A weight of from 5 to 10 gm. at birth may be considered within normal limits and a gland weighing more than 10 gm. at birth, or 15 or more gm. during the first six months should be considered abnormally large and, therefore, pathologic. It is generally considered that the weight of the thymus is greatest at birth (Bovard and Nicoll[3]) and physiologically diminishes from this time, averaging during infancy and childhood about 4 gm. In the marked enlargements the weight is from 30 to 35 gm. or 1½ ounces. Hammar states that "only after puberty does the thymus begin to diminish. From 15 to 25 years it diminishes rapidly and at 50 to 65 years may weigh only 0.73 gm." In old age the thymus consists of a small mass of adipose tissue in the anterior mediastinum. One can, therefore, say that at birth there are definite indications of what constitutes an enlarged thymus, and that at least after puberty there is a great diminution in size, but that the gland can still be demonstrated in old age.

Structurally the thymus is composed of a number of lobules, varying as to size from a millet seed to a small pea, and each lobule is subdivided into small follicles which constitute the functional structure of the gland. Each follicle is composed of a cortex and medulla, the cortex being regarded as the important part of the gland. The medulla is composed of coarse reticulum and cells, including the Hassall corpuscles. The external lobation is classified by Coplin[4] into the unilobar, bilobar and trilobar types. Those glands in which the lobar division is imperfect he classifies as conglomerate. Coplin found no thymus located entirely in the cervical region. He describes a thoracic thymus as one whose upper border does not extend above the upper margin of the sternum and a cervicothoracic thymus as one, whose contigous parts lie in the thorax and extend upward into the neck.

In 1921 Nöback[5] published a study on the topographic anatomy of the thymus gland, with particular reference to its changes at birth. Some of his deductions are:

1. The location of the thymus is determined early in fetal life and respiration has obviously no effect on it.

2. The thymus in the late fetus and in the new-born is predominately of the cervicothoracic type.

3. The thymus in the late fetus and still-born has a typical form and quite constant relations. Its lateral surfaces are convex and bulge against the medial surfaces of the lungs. The lungs very rarely extend at all on its anterior surface and the thymus very rarely extends at all on the anterior surface of the right ventricle of the heart.

4. The thymus in live-born infants has a typical form and relations which are similar to those found in young children. It is elongated and moulded so that its anterior, lateral and posterior surfaces bear the impress of all the organs with which it comes in contact. Its lateral surfaces usually show marked convexities which are occupied by the lungs, which pass over the anterior surface of this organ. Unlike the fetal thymus, it usually extends more inferiorly, passing over the right ventricle.

5. The change from the broad or fetal type of thymus to the elgonated and moulded type found in the live-born and young infants bears a direct relation to the establishment of respiration, and is dependent on the expansion of the lungs.

6. In some cases the thymic substance may extend posteriorly at birth to such an extent that the structures situated there are compressed by it. This may be due to an unusually large thymus or a very narrow superior thoracic aperture.

These deductions are made from a study of 65 fetuses and bring out very important anatomic relations.

The thymus may persist well into adult life and may or may not cause symptoms or sudden death. Yamanoi investigated the thymus in 303 persons over twenty-five years, who died of influenza, and in 60 older cadavers. In 26.34 per cent of the 187 men and 20.68 per cent of the women there was more or less persistence of the thymus. He says this shows that the persistence of the thymus is within physiologic range. All microscopic tissue after twenty-five years is not, therefore, pathologic. On the other side, persistent pathologic thymus is found in adult life. The war regulations provided for autopsies on many cases of unexplained sudden death. Such instances were recorded in the air and other forces. The late Prof. J. J. McKenzie, of Toronto, described the case of an artilleryman of apparently excellent health, who expired suddenly when kicked at by a mule. There were no traces of injury on the body and the mule's foot had not touched the man. Autopsy revealed a greatly enlarged thymus.

Sudden death in status lymphaticus has been attributed to several causes, such as pressure from enlarged thymus. This does not seem a probable or frequent cause, as the pressure is not greater during an attack of thymic asthma and the patient frequently shows no symptoms from pressure or otherwise until the attack suddenly manifests itself. There are cases of thymus apoplexy, due to pressure from hemorrhage into the thymus. Wahl and Walthall[6] report a series of such cases, but all occur in cases exhibiting the hemorrhagic diathesis.

That pressure from enlargement of the thymus may play a little part in the production of sudden death has been demonstrated by Dr. Smith, of Portland, at this session. Following the work of another observer, he injected paraffine into the anterior mediastinum in a series of guinea pigs. Amounts sufficient to fill the anterior mediastinal space produced no apparent symptoms and the pigs were killed and examined at varying periods of several days to several weeks after injection. In no instance were pressure symptoms observed and yet in all cases the hardened paraffine filled the anterior mediastinal space, occupying the position and anatomic relations of an enlarged thymus.

Other suggested causes, which will not be discussed here, are (a) chemical intoxication, (b) lack of epinephrin or excess of thymus secretion, (c) lymphocyte infiltration of the myocardium.

The chief symptoms associated with "thymic death" may be considered as (a) mild symptoms indicative or suggestive of pathologic thymus, and (b) those sudden terrifying symptoms accompanying a fatal seizure. The suggestive symptoms are most important from the standpoint of prolongation of life. They are convulsions occuring at intervals from no apparent cause, such as acute intestinal poisoning, tetany, etc., wheezing attacks, continuous exaggerated abdominal breathing, mild but frequent dyspnea from no apparent cause, a condition often described by the parents as unexplainable "breathlessness." The dyspnea is not constant and, therefore, cannot be explained by pressure alone.

The symptoms during a typical thymic asthma seizure are dyspnea, prolonged and paroxysmal, cyanosis, shock and found collapse. The onset is sudden and the termination usually fatal.

The other type of thymic death occurs unexpectedly and quietly. The infant is found dead in bed, with no history of illness, or often some mild derangement, as nasopharyngitis, mild bronchitis, etc., is present, or death occurs after some trivial operation, as paracentesis.

The enlarged thymus may be demonstrated by the following physical signs:

1. Protrusion of the manubrium sterni (Rehn's sign).

2. Palpation of the enlarged gland, as it rises above the sternum with inspiration. Both these signs are extremely rare.

3. Dullness on percussion, extending beyond the sternum in the first two intercostal spaces. The dulness continues in almost a straight line downward and blends with the cardiac dulness below. The dulness extends both to left and right, varying as to extent on either side. Blackfan and Little recommend that percussion should be made with the body in a horizontal position, the head resting on the occiput and in semiflexion, the arms extended and clasped about the head, and the legs slightly flexed. Dulness should extend in positive thymus seven-eighths inch or more to the left. Dulness to the right of more than one-half inch is very suggestive. Personally I think one has to be very expert to satisfactorily percuss an enlarged thymus of moderate dimensions.

4. The x-ray furnishes the most reliable diagnostic data. The position of the patient should be the same as for percussion and care should be taken in centering the rays.

A shadow in the superior mediastinum, which disappears or diminishes on treatment, may be regarded as an enlarged thymus. In thymus cases the shadow on the plate has been shown to correspond accurately with the percussion area and with actual measurements taken at autopsy. A shadow in the superior mediastinum, which does not diminish on intensive x-ray treatment, is not due to thymus shadow.

While an enlarged thymus in infants does not in some cases produce clinical symptoms, we should regard such a case as at least a "potential pathologic thymus" and give the patient the benefit of the doubt.

TREATMENT

During an attack adrenalin chloride hypodermically gives relief in the milder cases and may be the means of preventing a fatal issue, and tiding a case over until x-ray treatment can be instituted. It has been demonstrated that an enlarged thymus shadow can frequently be demonstrated in children exhibiting no clinical symptoms. Blackfan and Little[2] investigated 60 such infants and found a thymus shadow in the anterior mediastinum in 50 per cent of these. Treatment by x-ray diminished these shadows, while in those untreated the shadow persisted.

This brings up the point as to whether all cases with enlarged thymus shadows should receive treatment. The suddeness of thymus death and the fact that individuals have reached adult life only to succumb in this tragic manner seems to justify early treatment as soon as the diagnosis is made. X-ray treatment does diminish the size of the thymus, and an alleviation of symptoms frequently coincides with the reduction in size of the enlarged gland. We know comparatively little of this complex condition known as status lymphaticus, but it does not seem rational to hesitate in the use of treatment until more knowledge is gained.

Proper technic for x-ray examination and treatment should be observed. In the series of cases that follow the plates were made and the treatment given by Dr. McIntosh, radiologist of the Vancouver General Hospital, to whom I am indebted for much helpful advice and cooperation. For exposure plates the ray was centered over the upper border of the first rib. A Coolidge 30 ma. radiation tube was used with 5-inch spark gap, 20 ma.; distance 24 inches; time approximately one-tenth second. For treatment a Coolidge tube, universal broad focus, spark gap 8 inches, 7 ma.; distance 10 inches, time 4½ minutes. The treatment in this series was given fortnightly, unless some intervening condition prevented. An inhibitive reaction is brought about with the first treatment, but continued treatment is necessary to prevent regeneration and to complete the retrogression. The alleviation of symptoms and the reduction in size of the gland, shown by x-ray, are the guides for futher treatment. There is perhaps the danger of producing a stimulative effect by over treatment.

I wish to illustrate some of the different phases of enlarged thymus by quoting some case histories.

Case Mc. Age 14 months when first seen. Family history. Great-grandmother had asthma. Father gets hay fever since service in France. Only sister had attacks at five months which mother thought were asthma. Between the fifth and sixteenth months she had four different attacks, duration two to three days. Attacks came on usually in day time. At 16

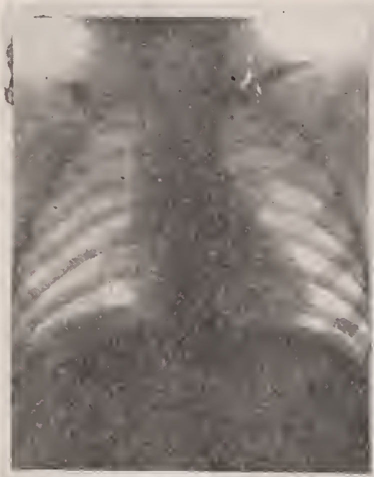

FIG. 1

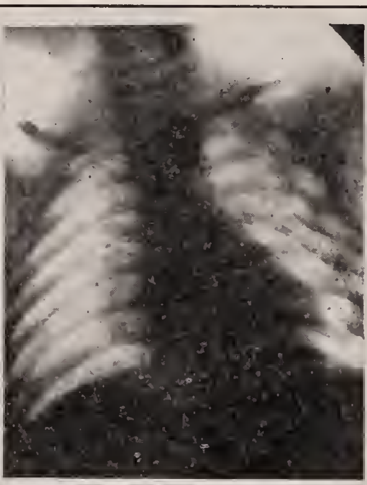

FIG. 2

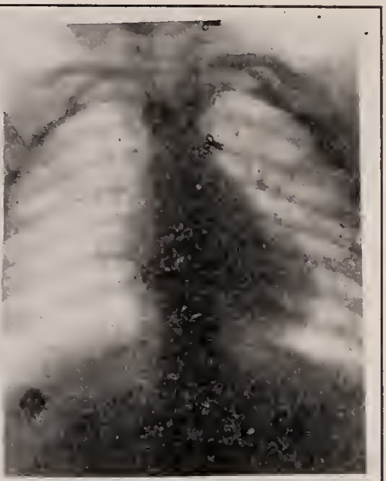

FIG. 3

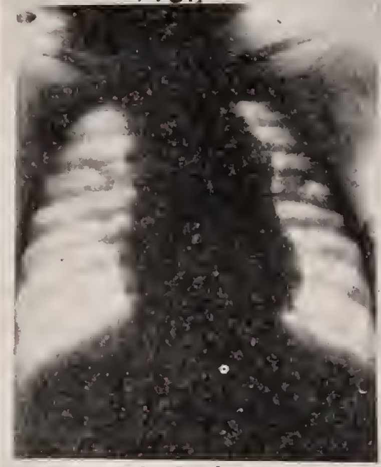

FIG. 4

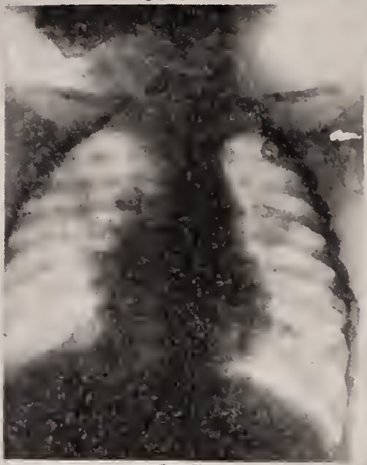

FIG. 5

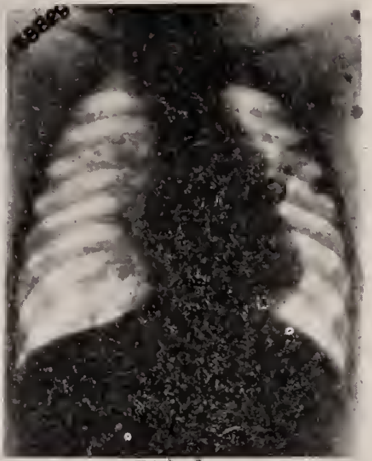

FIG. 6

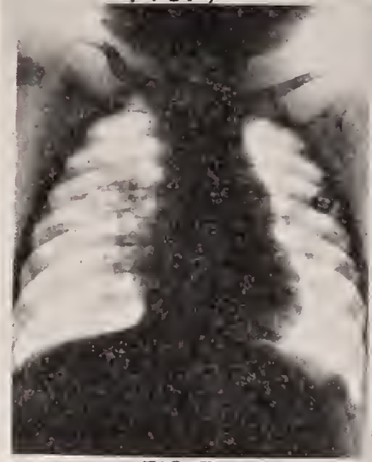

FIG. 7

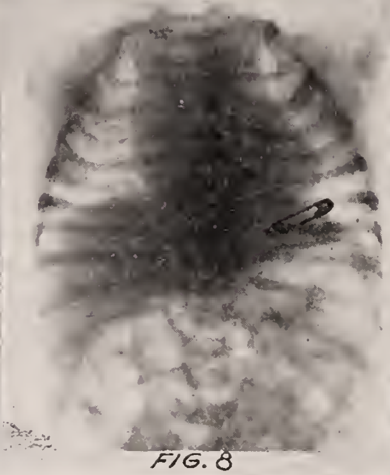

FIG. 8

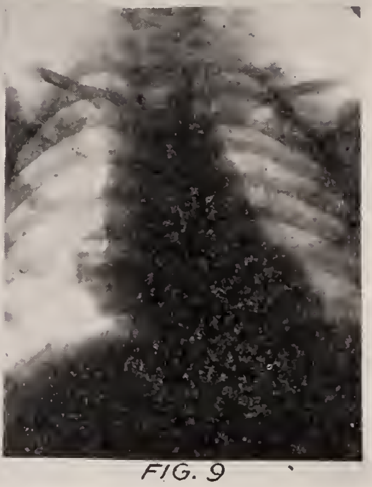

FIG. 9

Fif. 1. Case Mc. Diagnostic plate. Moderately enlarged thymus. Clinical symptoms marked. Sister died at 13 months, typical thymus death.

Fig. 2. Case Mc. Thymus shadow after three treatments. Clinical symptoms much less marked.

Fig. 3. Case Mc. Final plate after treatment from Jan., 1922, to May, 1923. General condition good, no clinical symptoms.

Fig. 4. Case D. Age 8 months. Diagnostic plate shows thymus shadow to right and left.

Fig. 5. Case D. Thymus shadow reduced after first treatment.

Fig. 6. Case D. Thymus shadow after second treatment. Clinical symptoms less marked.

Fig. 7. Case D. Thymus shadow after three exposures. Clinical symptoms much improved.

Fig. 8. Case H. Male, age 7 months. Cerebral hemorrhage, enlarged thymus. Autopsy showed thymus diminished after one treatment.

Fig. 9. Case K. Cretenism. Enlarged thymus, tonsils and adenoids. Plate taken 4 weeks after uneventful tonsil operation.

months she developed a mild nasopharyngitis. Family doctor had been called on previous occasion but, as he was absent from town and the attack was mild no other doctor was called. Mother put baby in bed, thinking her condition was not alarming, but found the child dead during the night. There had been some wheezing during the day but not marked cyanosis or stridor.

Our patient was watched carefully from birth on account of the sudden death of the first child. She was nursed until ten months. At this time she was put on cow's milk mixture and at 10 1-2 months vomited and became pale after taking egg yolk. She was later given small amount of custard, which produced hives. At 13 1-2 months of age she had a wheezing attack which the mother stated was similar in character to the first attack of the sister. She had a cold at the onset which had cleared when I saw her in consultation one week later.

The wheezing was not marked and was intermittent, but the condition, altho not alarming, had not entirely cleared. The wheezing lasted at intervals for several days after my first visit on Jan. 12, 1922. On Jan. 23, an x-ray (fig. 1) was taken. The shadow is not marked but this enlargement, taken in conjuction with the history, seemed sufficient grounds for x-ray treatment, which was given on Jan. 31 and was followed in two hours by vomiting attacks which lasted twenty-four hours. There was also some wheezing and the mother described a peculiar snoring noise, which had not been present at time of treatment. In the two weeks interval before the second treatment there were several attacks with wheezing, with one on Feb. 4, which was rather severe, wheezing and dyspnea were quite marked, with moderate cyanosis. Adrenalin min. v. gave considerable relief ten minutes after injection. The vomiting, wheezing and peculiar snoring followed the second exposure, but were not so marked. Improvement was noticeable after the second treatment, but attacks continued at various intervals. On May 4, some time after the third treatment (fig. 2) she had a severe attack. Adrenalin chloride again brought relief but the dose had to be repeated.

By June 10 the attacks were much less frequent and were not alarming, coming on usually after crying attacks. The tonsils and adenoids were now quite large and x-ray treatment was started for this condition. Mild nausea and vomiting followed the x-ray treatment but her mother noticed she did not wheeze as before. By July 1 her general condition was very good. She was breathing quietly at night; a few very slight wheezing attacks had occurred since last x-ray treatment. Since this time there have been no attacks with the exception of a mild one on Aug. 29. During this period she had a mild attack of influenza, complicated by otitis media, a paracentesis being done without an anesthetic.

On May 15 x-ray examination (fig. 3) showed no broadening of superior mediastinal shadow. Last report, Aug. 19, gave no further symptoms of any attacks. From the history of these sisters one might be justified in assuming that the x-ray treatment in the second child produced good results in a condition resembling that present in the sister who died suddenly.

Case D. Male, age 8 months. Normal labor, nursed until six months. Mother noticed baby panting at times in first days after birth. At times he became wheezy. No cyanosis. Abdominal breathing deep and exaggerated. The panting and wheezing had gradually become more marked. There was dullness on percussion to right and left in superior mediastinum. Heart negative, chest showed a few rals. Tonsils and adenoids present.

Feb. 1923, x-ray (fig. 4) shows enlarged thymus. Treatment given which was followed by mild vomiting and wheezy breathing. March film (fig. 5) taken and compared with previous film, showed a marked diminution in size of thymus. Symptoms clearing. June 15 (fig. 6). Child has had four treatments. All symptoms clear. The shadow is much diminished. Child to have tonsils and adenoid treatment later. August, child has been very well but developed a fermentative diarrhea. Temperature 105°. Some dyspnea and cyanosis. Condition much improved in twenty-four hours but further thymus treatment will probably be given.

Case H. (Fig. 8.) Age seven months. Cerebral hemorrhage at birth. Diplegia. Enlarged thymus. One x-ray treatment. Death occurred two months after first treatment. The condition of the child did not permit a second treatment. Autopsy showed an enlarged thymus which was much diminished in size after treatment.

Case K. (Fig. 9). Seen after tonsil and adenoid operation, which was uneventful. X-ray ordered by oculist on account of eye condition which he thought might be tuberculous, x-ray showed shadow in superior mediastinum to right and left.

This illustrates that tonsils and adenoid operation can sometimes be done in such cases. There is also a report in *Clinics of North America* of an operation on a child with markedly enlarged thymus and hyperplasia of lymphoid tissue. One is taking grave chances in operating in such a condition.

Case L. Normal healthy child, eight months of age. Showed no clinical symptoms of any kind. X-ray showed an enlarged thymus. No treatment given. Child apparently normal at fifteen months when last examined.

The varying results in these cases emphasize the perplexing complexity of the state known as status lymphaticus. Several died suddenly without developing any acute clinical symptoms; one died after a slight operation; another, altho the thymus was markedly enlarged and there was hyperplasia of other lymphatic, underwent an uneventful operation for tonsils an adenoids. Several others showed marked symptoms relating to thymus disturbance, while one showed no symptoms of any kind, altho the x-ray showed an enlarged thymus at eight months of age. In spite of all this variability in course, the fact remains that in some cases x-ray treatment is apparently producing very good results and should be used as a routine.

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ARTIFICIAL ENLARGED THYMUS*
PRELIMINARY REPORT

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In an infant dyin suddenly it is startling at autopsy, on opening the thoracic cavity, to behold the thymus gland presenting itself as a large mass overlying the heart, trachea and great vessels. One can scarcely refrain from jumping to the conclusion that the enlarged thymus itself was the direct cause of death. The medical literature is pretty well filled with such cases. In fact, one would almost come to the conclusion that any infant possessing an enlarged thymus would probably die suddenly.

It is only recently that the other side of the story is being told, with reports of cases of infants and children with enlarged thymus glands without symptoms and without suddenly dying, even undergoing operations and taking anesthetics. (Blackfan and Little[1], Gerstley[2] and Greenthal[3].

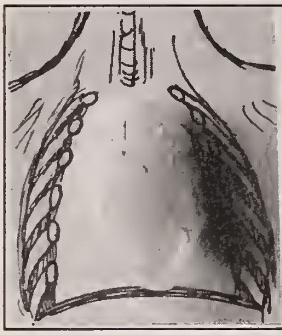
That the hypertrophied thymus plays some role in the cause of death in these cases is reasonable to suppose. Whether this be mechanical or toxic in nature or lack of a detoxitizing agent (the supposedly normal thymus function according to Hammar[4]), is not so easily determined.

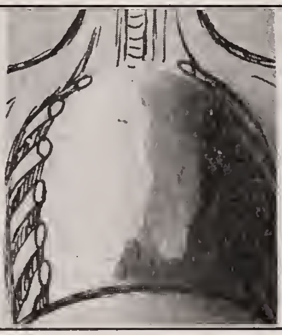
When one reviews the literature on the thymus, its function, its relation to sudden death and status lymphaticus, no consensus of opinion is found, the chief controversy being over the mechanical effect of an enlarged thymus. This controversy has covered a period of over seventy years.

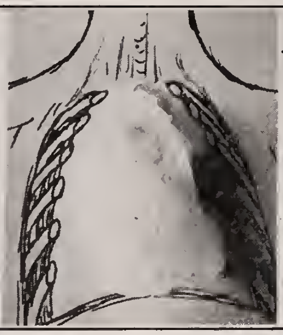
There appear to be many authenticated cases, where the thymus mechanically causes symptoms, where surgical removal of the gland or atrophy by x-ray treatment relieved the symptoms. But that the thymus by its mere mass or size, even with sudden engorgement (a thing difficult to prove) could cause death, hardly seems probable. Even in cases of so-called thymus apoplexy, as pointed out recently by Wahl and Walthall[5], the mechanical factor is not the true cause of death. Schleele's[6] postmortem experiments, in which he showed that it took a weight of seven hundred and fifty to one thousand grams to compress the trachea of a child, cannot be used to cover conditions in the living.

An attempt was made to investigate experimentally the mechanical effect of a mass suddenly thrust into the anterior mediastinum in the region of the thymus gland.

Eight guinea pigs from four to eight months old were taken, and under chloroform anesthesia varying amounts of melted paraffin (1-2 to 3 1-2 c.c.) were injected into the thorax in the thymic region and watched for injurious effects. There were none! Here indeed is a sudden enlargement of a semi-soft mass in the anterior mediastinum which apparently causes no symptoms, certainly not sudden death. The guinea pigs were allowed to live from one to three weeks and then chloroformed. The autopsy findings were truly as startling as those of a human child with an enlarged thymus. The accompanying photographs of the paraffin, as it was recovered from the guinea pigs at autopsy, give some idea as to the relative size of the "artificial enlarged thymus" in comparison with the thorax.







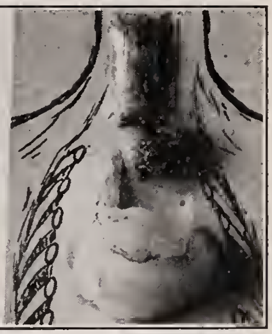


Fig. 1. Paraffin (2.5 c.c.) lying over and partially encircling heart of guinea-pig without causing symptoms or sudden death.

Fig. 2. Paraffin (3.5 c.c.) recovered at autopsy from mediastinum of fiuinea-pig, showing relative position and size.

Fig. 3. Paraffin (2.5 c.c. completely filling anterior mediastinum of guinea-pig, causing no symptoms.

Fig. 4. Paraffine (2.5 c.c.) lying over heart, showing broken pieces extending up into neck of guinea-pig.

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*Read before the North Coast Pediatric Society, Seattle, Wash., June 18, 1923.

ACCESSORY SINUS DISEASE IN CHILDREN *

ARTHUR CURTIS JONES, M.D.

BOISE, IDA.

I am pleased to have the opportunity of speaking to you men on this subject. When a child shows signs of impaired health you who are doing general work are usually consulted before the rhinologist.

The symptoms of sinus disease are subjective rather than objective. If you are not looking definitely for a special infection, it is very easy to overlook the actual cause of ill health. Children very seldom complain specifically of localized headache before the age of six years; neither do they state that large quantities of pus are continually dropping into the pharynx and the pus is either swallowed or inspirated. However, they all have the possibility of a sinus infection from earliest infancy. The antra, the ethmoids and the sphenoids are present at birth; the frontals are not, but depend upon a migration of the anterior ethmoid cells for their formation. In early infancy these cells are very small, and most embryologists state that their size will be dependent upon their ventilation and drainage during the first few months and years of childhood.

L. W. Dean[1] reports three postmortems on babies dying as a result of sinus infection. They showed pus under pressure in both antra. The superior and inferior meatus were also filled with pus.

One of my cases, a baby three months of age, developed in the course of the infection a generalized osteomyelitis of the left superior maxilla, involving the hard palate. There was a fistulous opening running from beneath the eye into the middle meatus of the nose. The mother refused to permit an operation, and when last heard of the baby was being treated by a chiropractor.

Another infant, age ten months, referred to me by Dr. Tallman, had granular and hyaline casts in urine and general edema, left ear discharging, both nares filled with pus, and a large mass of adenoids palpable. In ten days, with local treatment of the nose, together with the removal of adenoids, the urine became normal and the discharge from the ear ceased.

Fever and intestinal upsets in small children are usually ascribed to a tonsil and adenoid infection or a gastric upset due to eating indigestible foods, but it is rather disconcerting to have the same symptoms continue even after a complete T. and A. removal and a guarded diet.

Baby C, age eighteen months, referred to me by Dr. W. F. Smith, comes in because of persistent cough, worse during morning hours of sleep. Examination showed: Large mass of adenoids palpable, tonsils small and not inflamed, pus in both nostrils, nasopharynx congested, ear-drums reddened and swollen. The adenoids were removed, but the child did not improve until its nose was cleaned carefully twice a day with an alkaline antiseptic used in a No. 10 Devilbine atomizer. Turbinates were swabbed with a two per cent mercurochrome solution for ten days, after which time the cough disappeared, and the child has remained entirely well for the past three months.

Baby H, age fourteen months, referred by Dr. Cluen, with almost the same symptoms as baby C. Adenoids removed. Child returned in a month with no improvement. Treatment in the office for six days stopped cough, and no trouble reported for the past six months.

Beginning at the age of six, I have several children who begun to take notice of definite headaches. Some even complained that the change of position from standing to stooping increased their discomfort.

M. M., age seven, referred by Dr. Falk, tonsils removed at five. Has recurring attacks of fever and intestinal upsets. Condition was improved for a while, but during the past two years has had frequent attacks of bronchitis and a persistent purulent nasal discharge. Three weeks before consulting me the child had a severe pain in left cheek, extending over left eye. On moving eyes complains of pain.

An x-ray shows a slight cloudiness in left antrum. Local examination shows pus beneath left middle turbinate and nasopharyngeal irritation. The child was treated with suction and local applications to nose. Pain subsided, but purulent discharge continued. After six weeks of careful treatment I gave her a general anesthetic and made a small opening beneath left inferior turbinate and curetted left anterior ethmoid cells. The child has improved greatly in health and has missed only one or two days of school in the past three months. Previously to this the mother said that since entering school the child had never gone for two consecutive weeks without missing one or two days.

M. M., age eight, comes to me because of severe pain over right eye. Unable to read his books in school because of increased pain. Marked area of tenderness over right eye. X-ray shows right anterior ethmoids and antrum all cloudy.

Sprayed the nose with one per cent cocaine alkaloid in paraffine oil and menthol, ten grains to the ounce. Suction was applied and at least a third of an ounce of creamy pus was drawn into the suction tip. The pain was immediately relieved and the child returned to school the following week. The suction was continued for ten days, at the end of which time there was no pus in the nose and the pain had entirely disappeared. However, an x-ray still shows some cloudiness, due perhaps to the thickened mucous membrane lining in the various sinuses.

I wish to emphasize the fact that none of these children should be operated on immediately unless they are showing some signs of a possible frontal lobe abscess. If they have enlarged tonsils and adenoids, these should be removed. I believe it is

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* Read before the Thirty-first Annual Meeting of Idaho State Medical Association,, Idaho City, Ida., June 13-14, 1923.

equally important that the suction and nasal treatment be tried for at least three weeks before operative interference on the sinuses.

So many children have a discharge from the nose that we are apt to become careless and classify it as being normal for the little ones. Such is not the case. I believe that much consideration should be given this particular condition. It will be a great help in arriving at the etiology in the various disorders of childhood, including purulent bronchitis.

So far I have spoken only of the good results that followed careful treatment of accessory sinus diseases. Unfortunately I have a group of cases in which the results have been far from satisfactory. I can also plead guilty to not associating purulent bronchitis with sinus disease until about eighteen months ago, and in looking over the causes of purulent bronchitis in children in the various standard textbooks I find practically no mention is made of this as an etiologic factor.

Still[2] states that the presence of adenoid overgrowth of hypertrophied tonsils is very commonly responsible for frequent attacks of bronchitis in children. He also states that there is a special tendency to bronchitis in infancy because there are undoubtedly certain features in which the lung in the infant differs in its histology from that of the adult, particularly in the abundance of loose connective tissues in the wall of the bronchioles and alveoli. It has been suggested that the blood-vessels in this connective tissue, being but loosely supported, are more readily dilated.

E. C. Mitchell and J. J. Shea[3] graphically describe the condition of purulent bronchitis in children. Influenza appears to have a predilection for infecting the ethmoids and the sphenoidal sinuses, and the principal increase in sinus diseases may be attributable to the recent epidemics. The patient seldom gives as the chief complaint a symptom which is a direct accusation of the sinus; hence these cases go more often to the pediatrician and the practitioner than to the rhinologist, as the discharge descends to the posterior nares into the pharnyx and down into the larynx. The child's attention is centered upon these regions, and it complains, or its parents complain, that the child is continually clearing its throat. In these cases the history often obtained is of sneezing, particularly in the morning and at intervals during the day, accompanied by nasal discharge.

They further state that the West is full of patients who have been urged to seek a better climate before their condition advances beyond repair. They seek relief from a cough that was productive on arising in the morning, of loss of ambition, increased lassitude, and a temperature arising in the afternoon. This train of symptoms attracted the attention of a diagnostician to the chest and he failed to find any definite pathologic physical signs. They had their lungs radiographed, with the usual finding of peribronchial thickening, mediastinal cloudiness and a few apical scars. During all this time these cases are still having a postnasal discharge, and each morning finds the discharge about the larynx ready to be expelled. Hence the diagnostician in despair advises, "Go West!"

In addition to this, there is a peculiarity about the purulent bronchial cough and the material expectorated that, when once recognized, will hardly be overlooked a second time. Without apparently any effort the child is able to cough up a very thick yellow sputum. In the more aggravated type of cases only a few minutes will have elapsed between coughs and each cough is productive of a large lump of greenish-yellow pus. The cough itself is characteristic; it gives one the idea that the bronchial tubes must be filled to the very top, even to overflowing. The overflow irritates the pharynx and causes the expectorative effort. A large amount of purulent sputum is swallowed rather than expelled, because most children are cautioned not to spit in public. This is another cause for the intestinal upsets.

I have had about twelve of these interesting, but discouraging, cases within the last year. I am giving the history of a few of the more interesting ones:

M. L., referred to me by Dr. Falk, age seven, has had a purulent bronchial cough for about four years. Had tonsils and adenoids removed three years ago. No improvement. Cough is much worse in the morning and the child does not cough in the daytime. Nose has been discharging since the child was three years old. Has had chickenpox and whooping-cough; influenza three years ago.

X-ray showed antra cloudy, marked peribronchial thickening, and a dark shadow in the region of the antrum. In brief, the child was treated for a period of six months, first with suction and local to the nose, then a double antrum and ethmoid operation, but I am sorry to state that the only thing I was able to accomplish was to clear the local infection in the nose and sinuses. The cough and purulent sputum remained unchanged. Since leaving my care the child has had pneumonia and at the present time is under the care of one of Abram's disciples.

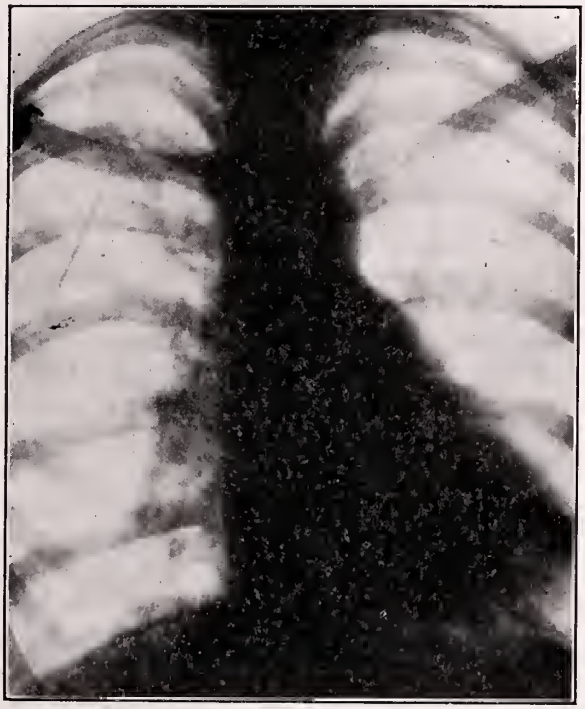
M. C., age thirteen, comes to me because of roaring in right ear and difficulty in hearing. The child has had recurring attacks of bronchitis for the past six years. Has chronic laryngitis nearly every winter. Tonsils operated on at the age of three years, and again at the age of nine.

Examination shows both nostrils filled with pus. Nasopharynx red and inflamed. Antra are dark.

Exploratory puncture revealed considerable pus in both antra, and more radical operation was done on both antra and anterior ethmoid cells. In six weeks' time the nose was free from pus and the hearing had returned to normal, and nine months after the operation the mother reports that the child has had no further bronchitis or laryngeal irritation.

The last two cases that I wish to report are under observation at the present time, and I am rather skeptical about their outcome.

E. L., age seventeen, referred by Dr. Tallman, comes to me because of a hacking cough, present ever since she was nine months old, at which time she had measles. She has had pneumonia twice, coughs, and spits up large quantities of purulent sputum, runs an occasion temperature; has been unable to go to school for the past three years, because of persistent bad health. This girl has had a diagnosis of tuberculosis, but no positive finding were made in the sputum. Three weeks before being referred to me she developed marked chorea.



Case L. C. Shows marked peribronchial thickening; heavy shadow over mediastinum. Not tuberculous but purulent bronchitis.

X-ray showed pansinusitis and typical peribronchial thickening in chest. White blood count 20,200, heart negative. Examination of nose showed polypoid masses beneath middle turbinate on both sides, and stumps of tonsils. Under local anesthetic, ethmoids and frontals and antra were all opened. The girl is being kept in bed and the sinuses irrigated daily. It is too soon for any improvement.

L. C., age sixteen, has been having a bronchial cough since the age of four. Treated for lung condition by various men. Has had several diagnoses for tuberculosis. No tubercle bacilli ever found in sputum. Mother says nose had discharged freely. Runs an occasional temperature. Never complains of headaches. Is hard to manage. Has been out of school since the age of twelve. Has more trouble in winter than in summer.

Examination shows right nostril entirely blocked by a huge polypus on left side and numerous small polypi on the right. X-ray showed pansinusitis. Under local anesthetic the polypi were removed. The anterior ethmodis on right side were practically destroyed by the infection. A large catheter was easily introduced into the frontal wall without any additional curettement of ethmoids. Much pus and some polypoid degeneration were found in both antra. A little over a month has passed since the child was operated upon. The nasal discharge is greatly decreased, but there has been no change in the bronchial cough, nor has there been any lessening in the amount of sputum.

I have under observation several younger children whose early history is almost the same as the last two cases. Fortunately, I have been able to clear up the pathology in the nose and their bronchial symptoms have improved in some instances. At the present time I am unable to state what the ultimate outcome will be in the more advanced cases, and I am perusing the literature for reports of similar infections.

Summing up this subject, there are a few facts that I wish to impress upon you:

First: Do not remove the tonsils and adenoids and expect all the nasal discharge, cough, and bronchial symptoms to disappear. Dean states that this will suffice in 80 per cent of the cases, but there is another 20 per cent that will need careful nasal hygiene and local treatment along with suction. In some of the cases it is advisable to have a suction device furnished so that they may use it at home.

Second: Do not diagnose a purulent bronchitis as a tuberculous infection unless you have investigated the nasal pathology and studied your chest picture carefully.

Third: An extension of infection to the bone or acute osteomyelitis is more common in children than in adults and more common in the acute stage than the chronic.

Fourth: If you have a chronic sinus infection in a child, you may expect almost any complication, including nephritis, pyelitis, bronchitis, asthma, chorea and general asthenia.

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Dr. Earl Miller has been appointed Director of the Department of Experimental Medicine of Parke, Davis & Company, Detroit, to fill the vacancy following the death of Dr. Ezra Read Larned, who was the originator and organizer of this department and occupied the position as head of the department until his death. Dr. Milled was assistant to Dr. Larned for twelve years and has a wide acquaintance among medical men interested in clinical research work.

SOME HEMORRHAGIC DISEASES OF EARLY LIFE *

EUGENE H. SMITH, M.D.
OGDEN, UTAH.

Recent studies on the physiology of the blood in infancy and childhood have thrown some light on the pathogenesis of certain of the hemorrhagic diseases occurring in early life, and contribute materially to the development of more intelligent methods of diagnosis and treatment. The somewhat diverse conditions here considered may seem to cover a rather wide range, but hemorrhage, whether appearing externally or not, is common to them all, and in most of them these newer studies are essential to their proper understanding.

INTRACRANIAL HEMORRHAGE

By far the most frequent, and undoubtedly the most important hemorrhagic condition encountered in early life, is that which occurs within the cranial cavity during or soon after birth. Fifty per cent of babies dying within the first few days after delivery are found to have had an intracranial hemorrhage.

It is not necessary to emphasize the importance of this condition or to dwell upon its fearful mortality or its even more unfortunate morbidity. These facts are well known, but its frequency is probably generally underestimated, and deaths from this cause are too often attributed to asphyxia, atelectasis, prematurity, etc. How much can be done to prevent its occurrence, what are its earliest manifestations, and what is possible to do for its relief once it has occurred, are questions which certainly should be seriously considered by every one who has to do with the newborn.

Birth trauma is probably the most important cause of these conditions. That it is the only factor is very doubtful. While upon difficult and protracted labors, instrumental interference, breech extraction, injudicious use of pituitrin, etc., rests the responsibility for the injury in most cases, many occur after easy normal deliveries, or even after delivery by cesarean section. Premature infants are especially prone to develop cerebral hemorrhage; in such cases the labor is usually normal; the head is subjected to very little compression, as the membranes often do not rupture until the last moment, or may remain intact even after the delivery of the head. Studies of the blood of the newborn (Lucas et al., *Am. Journ. Dis. of Child.,* Dec. 1921, V. XXII, pp. 525-559) have shown that there is normally a prolongation of the clotting time during the first five days of life, due to lack of the prothrombin element, which in turn is a result of some qualitative change in the blood platelets. An exaggeration of this normal condition is the basis of most hemorrhagic conditions occurring in the newborn, and plus trauma is responsible for at least many cases of intracranial hemorrhage. (Rodda. *Am. Jour. Dis. Child.,* Apr., 1920. V, XIX, 268.)

These facts, indicating that factors other than trauma are concerned in the etiology of intracranial hemorrhage, and the further fact that it is a condition which may require several hours or days for its full development, demand a closer study of the infant and a recognition of the earliest signs of its presence. It is to be feared that too often the lesser symptoms are overlooked, or an unintelligent optimism allowed to prevail, when closer study of the case would permit of an earlier diagnosis and perhaps effective treatment.

Such symptoms as convulsions will obviously not be overlooked, but slight asphyxial attacks, refusal of the breast, unusual palor, slight spasticity, increased reflexes, etc., are likely to be lightly passed over in the hope that everything will come out all right in a few days. Such delay, however, may work irreparable harm, and it is imperative that, when these or any other symptoms arouse suspicion, some simple test of the coagulation time and bleeding time, as suggested by Rodda, should be made, and probably also a spinal puncture, for in a certain proportion of cases blood will be found in the spinal fluid. Any marked delay in clotting time beyond that normal in the new born indicates that hemorrhage is imminent, and the appearance of blood in the spinal fluid proves that it has occurred.

Treatment manifestly is of no avail in those large intracranial hemorrhages, in which death occurs in the course of a few minutes or hours, but it is certainly worth while in those cases, in which the slower development of symptoms suggests that the bleeding is of lesser volume or intensity. Under such circumstances it is wise to attempt to check the process by the subcutaneous injection of whole blood, and to relieve pressure by drawing off a reasonable amount of spinal fluid. Transfusion by supplying fresh platelets and prothrombin, and probably by stimulating the prothrombin forming elements of the infant's own blood, brings about a shortening of the clotting time, and checks the continuing hemorrhage.

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* Read before the twenty-eighth Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Aug. 31-Sept. 2. 1922.

HEMORRHAGIC DISEASES OF THE NEWBORN

The condition ordinarily designated hemorrhagic disease of the newborn is characteristized by hemorrhages, usually from the mucous membrane of the digestive tract, or from the unhealed umbilical stump. It may be concealed, as has been indicated above, when it occurs within the cranial cavity, and may in rarer instances occur in the form of hemorrhage into the adrenal gland. Certain cases of cephalhematoma are without doubt manifestations of this disorder.

The usual time of onset is within the first week postpartum. Cases occur, however, as late as ten days after birth. Hurwitz and Lucas (*Arch. Int. Med.* V. 17, 543, May, 1916,) and Lucas, et al. (*Am. Jour. Dis. Child.* V. XXII, pp. 525-559, Dec., 1921,) have called attention to the normal delayed clotting time of the blood of the newborn, which it is to be noted, coincides with the time of the occurrence of most of these hemorrhages. Some change in the blood vessels, an endothelosysis, is assumed to be another factor, but up to the present it has not been demonstrated. Duodenal ulcer has been found in many cases of intestinal hemorrhage.

At first bleeding may be very slight, perhaps a few drops of blood coming from some focus in the mouth, and first noticed in the bottle of water often given the baby. This may precede hemorrhage from the umbilicus as well as from the digestive tract, and should be promptly investigated. It should be insisted upon, in the event of even the slightest external hemorrhage, the development of cephalhematoma or, as has been indicated above, upon the advent of any symptom even suspicious of intracranial hemorrhage, that the clotting time be determined. Valuable time may thus be saved before more profuse hemorrhage supervenes.

Treatment is simple and usually effective. Intramuscular injections of whole blood or transfusion thru the longitudinal sinus usually checks the hemorrhage promptly, and with the restoration of the prothrombin balance, which normally occurs after five days, the tendency to bleeding ceases. No time should be wasted in giving calcium or in the subcutaneous administration of artificial coagulants, human or artificial serum. Any healthy person can furnish blood for subcutaneous or intramuscular injection, and usually the mother is a safe donor for transfusion.

THE PURPURAS

The purpuras are among the most interesting of the hemorrhagic diseases on account of their varying types, their obscure etiology and their relationship to such varied conditions as rheumatism, the erythemas, urticaria, angioneurotic edema and aplastic anemia. Classified under such titles as toxic (septic), senile, mechanical (epilepsy-pertussis), they occur following the ingestion of certain drugs, in acute infections, in various chronic diseases, in the aged, in ulcerative pericarditis, and in chronic nutritional disturbances.

The types most frequently encountered in early life are: simple purpura (with rheumatic manifestations), rheumatic purpura (peliosis rheumatica) visceral purpura (Henoch's purpura), hemorrhagic purpura, purpura fulminans.

While definite alterations in the blood vessels have not been demonstrated, it is assumed that purpura is the result of an endotheliolysis, due to some as yet unknown change in the blood. The changes found in the blood are prolonged bleeding time, decrease in the number of platelets and failure of the clot to retract. Ottenberg says that the latter occurs only in purpura hemorrhagica (*Med. Clin. N.A.* V. II, No. 1,289, July, 1918). A moderate leucocytosis may occur in certain forms (Henoch's purpura). The blood morphology is practically normal, and there is an almost complete absence of regeneration forms.

Purpuric areas vary greatly in size, number and distribution. They are most frequently found on the flexor surface of the extremities, often more profuse about the knees and elbows. In size they range from petechial spots a few mm. in diameter, to large confluent areas which may later become necrotic. Submucous hemorrhages may also occur in the mouth and upon the tongue.

The relationship between purpura and the exudative erythemas, urticaria and angioneurotic edema have not been fully worked out. Osler's studies are still our most reliable source of information. Regarding purpura as an hemorrhagic type of exudative erythema, he classes these with Henoch's purpura, purpura rheumatica and angioneurotic edema as the "erythema group." In 29 cases with visceral lesions, the most prominent symptoms of which were crises of abdominal pain and hemorrhage, he found 22 cases with purpura, 19 with urticaria, 14 with erythema. The importance of these observations from a diagnostic standpoint will be brought out later in dealing with visceral purpura.

Simple purpura with slight swelling and tenderness of the joints is quite frequently encountered, even in infancy. These symptoms are often preceded by tonsillitis or other evidence of focal infection, and it seems probable that it is merely a mild form of rheumatic purpura. Its duration is often but a few days.

In rheumatic purpura (peliosis rheumatic) the joint symptoms are more severe and the purpuric eruption likely to be more profuse. As in the preceding type, local infections about the nose and throat may antedate the characteristic pains and swellings of the joints and the purpura. The arthritis is usually not so severe as in rheumatic fever, but it should be borne in mind that in children joint symptoms are usually mild, even in severe rheumatic infections. The pain is shifting in character, and most frequently attacks the knee and ankle. The temperature is usually but slightly elevated, and is absent in about one-half of the cases. Besides the purpuric eruption, angioneurotic edema, urticaria and various erythemas occur in certain cases. The average duration of the disease is five weeks.

Visceral purpura (Henoch's purpura) presents the most varied and interesting symptoms. It is a disease of early life, most of the reported cases occurring before the age of twenty, and of these one-third between the ages of one and ten years. As in the above varieties, local infections about the upper air passages frequently occur a few days before the onset of headache, prostration, fever and joint pains. The pupuric eruption soon appears, and may be slight or very extensive. In some cases only a careful inspection of the body will reveal the few scattered spots, while in others it may be so well developed and of such ominous appearance as to dominate the picture. It is usually most marked about the knees, arms and the region of the shoulders. Successive crops appear as the older ones gradually fade, leaving a pale yellowish pigmented stain. In severe cases some areas, especially about the joints, may undergo superficial necrosis. Slight leucocytosis is usual, averaging in the neighborhood of 14,000.

Visceral involvement is manifested by two prominent symptoms: paroxysmal vomiting and abdominal pain. Vomiting is often severe and almost uncontrollable. It occurs in cycles during the course of the disease, each cycle lasting from twenty-four to forty-eight hours. Rarely is there vomiting of blood.

The pain is very severe, cramp-like in character, and is usually referred to the lower abdomen or the region of the umbilicus. The attacks last from a few hours to a day or two, then subside to recur with unabated severity. The abdomen during the attacks is tender and rigid, and sometimes distended. The recuring attacks of vomiting and pain may continue for from one to five weeks.

Bleeding from the bowels frequently occurs, and may vary in amount from a small quantity passed with one or two stools to the pasasge of such large amounts as to threaten the life of the patient from loss of blood. Hemorrhage from the kidney is fairly frequent, hemorrhagic nephritis being one of the most common causes of death in this form of purpura.

With well marked purpuric manifestations in the skin there should be no mistakes in diagnosis. In cases in which only a few purpuric spots appear, and at the same time the abdominal symptoms are severe, great diagnosic skill may be necessary in order correctly to differentiate the condition from acute abdominal crises, such as intestinal obstruction, especially from intussusception and appendicitis. Many cases have been submitted to surgical treatment, in which the abdominal symptoms of pain, vomiting, rigidity and blood evacuations from the bowels were wrongly atributed to one or the other of the above conditions. In a recently observed case in a child of four years, a diagnosis of intussusception was apparently obvious from the acute onset of paroxysmal abdominal pain, tenderness, vomiting, shock and passage of blood from the bowels. Under very close observation the symptoms subsided after about twenty-four hours, and the appearance of a few small purpuric spots about the knees apparently confirmed a final diagnosis of Henoch's purpura. The child rapidly and completely recovered.

In another instance the family, having observed the disastrous results of procrastination in acute appendicitis, could scarcely be persuaded that an operation was not indicated in the case of a young man, in whom, however, the appearance of successive crops of marked purpura gave firm ground upon which to base a diagnosis of visceral purpura.

Most interesting are those cases which connect up similar conditions with true rheumatism and Osler's erythema group. Bass (*Med. Clin. N.A.,* V. II, 1, July, 1918,) cites the following suggestive cases:

A personal case. Age 6, severe abdominal pain, vomiting and constipation, angina, tender and swollen ankles, hemorrhagic eruption about ankle and knee, bloody stools.

Quotes O. Schloss: Rheumatic fever, erythema nodosum, purpura, urticaria, erythema exudativum, intestinal hemorrhage, pericarditis, death.

O Schloss. Follicular tonsilitis, erythema multiforme, urticaria, colic, recovery.

Cases such as these and the very frequent occurrence of some focal infection about the nose and throat in typical cases of visceral purpura leave little doubt that there is an intimate relationship between true rheumatic fever and certain forms of purpura.

Treatment will be referred to only as applied to the control of the hemorrhage, and for this transfusion seems the most rational procedure. It should be undertaken when recurring crops of extensive intracutaneous hemorrhage occur, and is imperative when bleeding from the intestine threatens life. In the one case transfused by us the condition seemed almost hopeless, but following one transfusion of whole blood all hemorrhage ceased, and the patient recovered, convalescence being greatly prolonged on account of the secondary infection of necrotic areas at the site of the most marked purpuric areas, with the development of subcutaneous abscesses.

Purpura fulminans is fortunately a rare condition, as the mortality is practically 100 per cent. It is characterized by sudden onset, chills, high fever and great prostration, and frequently occurs as a complication or sequel of scarlet fever or the coccal infections. The purpuric areas are large and of wide distribution, but mucous membrane hemorrhages do not occur. All typical cases have occurred in children, the youngest being an infant of two months. Death ordinarily follows in from eighteen to forty-eight hours.

APLASTIC ANEMIA

It is said that most cases of aplastic anemia come to autopsy with a diagnosis of purpura. It occurs most frequently in early life and usually results fatally within a few months.

Blood: The color index is usually low; white cells are diminished in number with lymphocytes predominating. Red cells are greatly diminished with entire absence of regeneration forms. Ordinarily there is no poikilocytosis. The erythroblastic tissue of the bone marrow shows no ability to replace the cells destroyed. Platelets are greatly diminished.

The above picture suggests the presence of some toxic agent which causes rapid hemolysis, and at the same time so depresses the function of the hemoplastic tissue of the bone marrow that no new cells are formed; not an hypoplastic, but an aplasia.

This form of anemia is mentioned in this connection on account of the frequency with which hemorrhage into the skin and from the mucous membrane is encountered during the course of the disease. Purpuric areas are usually found upon the surface of the body, and hemorrhages from the mucous membranes, especially that of the nose, are often severe and almost intractable.

From the nature of the disease it is evident that transfusion can be of temporary benefit only, since the transfused blood is soon destroyed, and no new cells are formed. It may serve, however, to check severe hemorrhage. In a case observed a few months ago, the nasal hemorrhage was so severe as to seriously threaten life. Four transfusions were done with remarkable temporary benefit and control of the bleeding, but the patient later succumbed from pulmonary edema, following an attack of influenza. His anemia was progressing, however, and undoubtedly would soon have ended his life.

CONCLUSIONS

The scope of this paper would not allow of even a resume of the recent advances which have been made in the study of the blood of the newborn and in early life. The occasional references which have been made to them, however, indicate their practical nature, and we are lead to hope that physiologic and biochemic studies will in the near future greatly increase our knowledge, not only of purely blood diseases but of many other conditions as well.

Intracranial hemorrhage in the newborn is a very common and frequently overlooked condition. Birth trauma is not the only factor concerned in its production. In some cases at least it is probably one manifestation of the so-called hemorrhagic disease of the newborn. It should be considered a possibility in every newborn infant, its symptoms promptly recognized when they occur, and energetic efforts made to bring about a shortening of the coagulation time, and to combat the harmful effects of pressure.

In hemorrhagic disease of the newborn there is an exaggeration of the prolonged clotting time normal to the first few days of life. Its earliest manifestations should be promptly recognized, since in most cases the bleeding can be checked by early intramuscular injections of whole blood or by transfusion.

The purpuras offer an interesting field for study and observation, especially in their relationships with rheumatic fever, angioneurotic edema and the erythemas. Visceral purpura (Henoch's purpura) may closely simulate grave abdominal crises, and should be considered a possibility in the presence of obscure abdominal symptoms in early life.

NORTHWEST MEDICINE
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EDITORIAL

SUPERMEN IN SCIENCE
LOUIS PASTEUR

Before the writer lies an English translation of "The Life of Pasteur" by Rene Vallery-Radot, a well thumbed copy of which should be on the reading table of every physician in the land. A delightful introduction by Osler ends with the statement, "after rereading for the third or fourth time the *Life of Louis Pasteur,* I am of the opinion, expressed recently by the anonymous writer of a beautiful tribute in the *Spectator,* 'that he was the most perfect man who has ever entered the Kingdom of Science'." The work gains steadily in interest from the opening to the final chapter. It is in one, a biography especially of the scientific life of one of the great men of all time, a brief but illuminating history of France during the terrible period of the Franco-Prussian war, a narration of the incidents of warfare as practiced by the Germans at that time, which but anticipated the barbarities of the later and greater conflict, a compendium of the science of bacteriology during its development period to the time of Pasteur's death in 1895, and a directory of the great men of science in France and an epitome of the works of many of them, all told in a manner that makes the book read like a splendidly wrought romance.

Probably few present day physicians know that Pasteur, whose contributions to the science of healing were probably greater than those of any other individual, was a chemist and not a physician, tho it seems to have been one of the great regrets of his life that he had not received an education in medicine; and that his mighty discoveries dated from a strictly chemical or metallurgic interest in crystalography, beginning with his detection of the "right and left handed" crystals of tartaric acid and leading to his studies of the nature of fermentation in wine from which tartaric acid is derived. His remarkable powers of observation, of analysis and logical deduction, coupled with his splendid gifts of imagination, led him step by step from the discoveries of the microorganisms of fermentation to the multitudes of bacteridiae in the lower animals and finally in man.

Pasteur began life as the son of an heroic but humble tanner but ended as the great autocrat of science, a loved, respected and revered autocrat, before whom not only his own but many other nations bowed down and worshipped. In his struggles to success he overcame misfortune and seemed to have been the possessor not only of an indomitable will but of a body that would not yield. At forty-six he suffered a stroke of apoplexy, causing hemiplegia which ever after left its traces on him. Yet he continued to work and his greatest achievements followed this disaster which would have caused most men to give up and quit the seemingly unequal struggle. Combatted, contradicted on every side, forced not only to discover but to prove his discoveries, he was always victorious in his cause and, whether in scientific investigation and experimentation or in polemics of aggression or defense, none seemed ever successfully to have withstood him.

Here and there in the book a delightful and distinctly French touch is to be found. Who can help feeling a kindly sympathy for the discoverer of something great in science who is "overcome by his emotions" or who not infrequently finds his "ardent nature" quite ready to respond with tears when some great work that he has accomplished is praised? Who can fail to feel a glow of pleasure in the statement that this man was largely influenced in his arduous labors by the desire to lessen suffering and distress and by the naive observation of the author that his intelligence was "ever guided by his heart?" In "The Life of Pasteur" the readers will find not only a vivid and scientific portrayal of the origin of bacteriology but will be impressed by the marvelous insight, the genius for observation, the value of painstaking and persistent attention to the finest details, the nobility of character, the endurance that characterized this superman; and he who reads this biography will be the better physician, the better humanitarian and above all the better man for having done so.

THE AMERICAN COLLEGE OF PHYSICIANS

During recent years the American College of Surgeons has accomplished notable results in the elevation of the standards of the surgery, in establishing honorable relations between the practitioner and patients, in standardization of hospitals, in imparting to the public a more exact conception of the relations between scientific medicine and quackery, together with a more accurate knowledge of the purposes of the science of surgery and its relations to the people of the land. For other reasons, moreover, it has established itself as a living factor in the future development of surgery and has helped to raise the whole practice of medicine in the esteem of the public. It is to be noted, however, that the surgeons constitute a minority of the practitioners of the healing art and that surgery fills a comparatively small part among the ailments which demand the existence of the medical profession. The general practitioner has the medical responsibility and treats the great mass of human illness. He continues to represent the solid foundation of the medical service of America.

The American College of Physicians, as presented in the last address of its President, Dr. James A. Anders, has for its object the promotion of sound and lasting benefits for the progressive medical practitioners as a class. It aims not to control general practice but to assist in its needs and requirements without unwarranted interference with liberty of thought and action. The general practitioner cannot be expected to pursue original investigation in the pressure of daily practice, tho he can possess the research spirit and may devote a certain portion of his spare time to some sort of investigations. It is the purpose of the expert internists, represented by the College, to pass on to the general practitioner the knowledge which they may be able to acquire by means of medical extension service, which has already been launched in certain parts of the country. In certain eastern and middle western states work of this kind has been conducted under the auspices of this organization, similar to what has been established for a number of years in the State of Washington, under the direction of the medical extension course of the University.

Membership in the American College of Physicians is available to the applicant who, after obtaining his degree and concluded his internship, has experienced hospital service, assistantship as internist, medical society work, literary productions and research work in internal medicine. High professional ideas and excellence of character are but corollaries to such qualifications. An organization comprised of medical men of this character will essentially represent the best in medical thought and action. It is expected that it will assume an active part in the conduct of the medical side of hospital work, and that in the near future it will be in a position to present accurate data bearing on questions connected with internal medicine as related to these institutions. In his presidential address Dr. Anders suggests many lines of endeavor, along which it is expected this organization will function in an effort to promote more useful relations between general practitioners and various institutions of more or less pronounced medical character. He repeatedly emphasizes, however, the necessity and hope of extending assistance to the general practitioners in order that the broad field of practical medicine may become efficient and better able to accomplish its mission among mankind for the relief of human suffering and prolongation of life. The purpose of the College will be to represent the greatest service to the greatest number, to maintain and stimulate in the young physician the waning flame of ardor as a student, to attract his attention to higher standards of professional achievement and character. This institution with its purposes and aims is commended to the thoughtful consideration of the medical profession.

THE NEW MULTNOMAH COUNTY HOSPITAL

The new Multnomah County Hospital of Portland has to the present had little space in the columns of Northwest Medicine. Physicians thruout the Northwest should be made acquainted with this splendid structure. For many years Portland could boast without fear of successful contradiction of one of the most miserable buildings for the housing of its dependent patients to be found anywhere in the land of the free and the home of the brave. An obsolete residence, originally designed for a family of perhaps a dozen persons, was converted into a county hospital and made to house a hundred or more patients. As conditions grew worse the need for a better building was recognized and leaders among the taxpayers agreed that a new hospital was in order. This has just been completed on Marquam Hill next to the medical college and the visitor who enters it for the first time will be amazed and startled and then glorified by contemplation of its many perfections.

There is no private hospital in the Pacific Northwest that equals it in convenience and completeness of detail. If there is anything that has been omitted from it, the casual visitor will have difficulty in finding what it is. The entire building is fire proof; the accommodations for a large portion of the patients are in single rooms; such as are put in wards will be housed with not more than six or eight of their fellows; the lavatories and baths which are plainly but superbly tiled would grace the mansion of a millionaire. Surgeries are provided with all kinds of work, including an amphitheatre, which would make Harvey Cushing envious by comparison with the one he has in the Peter Bent Brigham Hospital of Boston. Operating roms are tiled in soft gray to relieve the strain on the eyes of the surgeons and nurses. Overhead lights in rings, designed to be turned at any angle and giving daylight effects, are to be noted. There are rooms for special kinds of work, such as cystoscopy, plaster work, confinement and bathing of newborn babes. Elevators carry one rapidly and noiselessly from top to basement and back again, discharging passengers on a roof which is to serve as a summer garden for those who crave sunlight—a beautiful roof garden, commanding a view that would delight the heart of a poet and ravish the soul of an artist.

Not the least of the desirable features of the hospital is the magnificent kitchen with its marvelous refrigerating plant, with separate coolers for meat, fish, vegetables, butter and fruits. Steam-heated wheel-trays to convey food to the wards insure that the most disturbing feature of hospital life to many persons, that is the serving of cold food, will be a thing of the past. Quarters for the use of students in connection with their teaching courses, including a room where they are permitted to rest or frolic until called for to attend their particular cases, a morgue with cooled chambers and a table for necropsies that would put to shame the average table in the average surgical operating room, makes one wish that he might go back to student days. And the laboratories, oh, well, what's the use! They're there. Come and see 'em .

Physicians and surgeons visiting Portland will make a mistake, if they fail to visit this great institution which is under the management of a full time county physician, Dr. Harry Cliff, who had much to do with the construction of the hospital and who assured the writer that he would be glad to welcome doctor visitors. And if he meets them with the same shining and enthusiastic countenance that he wore when the present writer was shown around, the visitor will go away a little exalted and impressed with the belief that altruism is not dead, but liveth.

A GROSS INJUSTICE

Since the Government officials have carried on an energetic campaign to apprehend distributors of narcotics, they have been successful in landing a goodly number of these parasites in the penitentiary, where they belong. In their zeal to accomplish results they have at times overstepped bounds of justice and have assisted in imposing intolerable attacks upon the medical profession. Undoubtedly there are a few isolated instances of physicians who have furnished narcotics to drug addicts in conscious violation of the law. There are, however, no grounds whatever for the belief which seems to exist among some people that doctors are in the habit of initiating and maintaining the drug habit among their patients. Such an opinion seems to be a part of the propaganda carried on against established practice of medicine by various bodies, one of whose chief functions at the present time seems to be to discredit regular medicine in the eyes of the public.

In the attempt to fasten on the medical profession the responsibility for this pernicious vice, there have been instances of gross injustice inflicted upon individual doctors. One of the most glaring of such performances was recently imposed on one of the oldest and best known physicians in Seattle. A drug addict and his wife were arrested and placed in jail. He was reported to have claimed that he obtained morphine the day before from two reputable physicians. On the basis of this statement he was sent out as a stool pigeon by the police for the apparent purpose of "getting a doctor." He visited the Cobb building, which houses a large number of physicians, and made the tour of offices, telling a sob story of the unfortunate condition of his wife, a drug addict, who was obliged to have a small amount of morphine in order to tide her over until she could reach her home in an adjoining city. All of the physicians refused his request until he called on this well known physician of years of practice, whose heart was touched by the pitiful story and he gave the man from his pocket hypodermic case a few tablets of morphine. He was paid with a marked bill, which was laid on the desk. Outside the door were standing two police officers and a deputy from the prosecuting attorney's office, all in citizens clothes, who immediately forced themselves into the doctor's office, grabbed the bill and carried him off to jail. The next morning's paper featured the story in large type, detailing how the police had at last captured a trifficker in drugs, together with the exhibition of his photograph and description of his years of practice and public offices which he had held.

No citizen would for a moment defend a physician or any other person who attempts to profit by trafficking in one of the most terrible forms of humans weakness to which man is subject. Anyone engaged in this nefarious business is entitled to a stiff sentence in the penitentiary, but either local or federal officers must be hard pressed to secure evidence for conviction, when it is necessary to resort to the above described machinations. The opinion was expressed by all classes of citizens in the newspapers and in conversation that it was an outrage thus to pillory a physician of unquestionable reputation who, while technically guilty of an offense, was such only by reason of a tender heart and a wish to help a fellow mortal in distress. It is notorious that public officials are not supposed to exhibit the milk of human kindness, but it seems as if there might be some consideration against blighting the reputation of a public spirited citizen who has not intentionally violated a legal requirement.

TUBERCULOSIS CHRISTMAS SEALS SALE

In preparation for the opening of the annual sale of Christmas seals for 1923, one billion two hundred million seals have been issued by the National Tuberculosis Association for distribution thruout the United States by the various state and local tuberculosis organizations. The movement has grown from the first sale in 1907 of about $3,000 to nearly $4,000,000 in 1922, and the aggregate sum in the fifteen years interval totals nearly $25,000,000. During this time every state in the Union has been organized and over 1,200 local leagues formed thruout the country. These have been largely responsible for the establishment of about 700 sanatoria and hospitals, having approximately 67,000 beds, for nearly 600 clinics, the employment of about 3,500 specially trained tuberculosis nurses, open air schools and preventoria in various parts of the country, and education about the causes, prevention and cure of tuberculosis, which has not been equalled in the history of health organization and work.

These efforts have resulted in a saving of human lives hard to visualize. In 1904, when the National Tuberculosis Association was formed, the death rate in the registration area was over 200 per 100,000 population or over twice as high as the 1921 rate of 99 or the 1922 rate of 97. This means the saving of approximately 100,000 lives each year or nearly the same number as population of Spokane or Tacoma. Prevention is admitted to be a far greater factor in the reduction of deaths than cure, and early diagnosis of suspicious or contact cases is the key stone of prevention. That with education will make the fight a real victory. The sale begins Dec. 1, closing Dec. 22. The need for supporting the campaign is just as great now as at any time in the past.

NEW CANCER JOURNAL

The first issue has been received of a quarterly journal entitled "Cancer," edited by Dr. L. D. Bulkley, of New York, and published by Davis and Company, of Philadelphia. The editor states that its business is to concentrate in convenient form all that will conduce to a better knowledge of cancer as a disease, its cause and proper treatment. He says there is already in this country one publication devoted to cancer research, which has not contributed much to the practical side of treating the disease. This journal will be open-minded and give consideration to all treatment which has proven to be of practical value in the control of cancer. This initial issue contains several papers which discuss the nature of cancer, its treatment, the cancer situation of today, its death rate in New York City. All the matter found in this journal is of interest to every practitioner of medicine, whether in general practice or in any special line.

EDWIN A. START

The occasion of the death of E. A. Start calls for more than a mere passing notice. Altho he had never received a medical education, his connection with the profession was an intimate one, owing to his position with the University of Washington. For the past ten years he was Director of Extension Service of that institution and his was hence the mind that annually arranged and presented the medical course which for many years has been one of the leading medical educational features of the profession of the Northwest. His previous training was a fitting one for this special work. He received the degree of A.B. from Tufts College and A.M. from Harvard. He was in turn a journalist, college professor and magazine editor, before assuming the duties of his last official position. He will be remembered as a man devoted to the University Extension work and a real friend to various lines of endeavor emanating from this special form of education. He had many friends among the medical profession who will remember him as an earnest, conscientious worker in the promotion of the best interests of the medical profession.

MEDICAL NOTES

OREGON

A Munificent Gift to Medical School. The University of Oregon Medical School received a gift of $200,000 from the heirs of Frank S. Doernbecher, for a memorial hospital for children. The elder Doernbecher was the founder of the manufacturing company bearing his name. He moved from Wisconsin to Tacoma, Wash., in 1890, locating in Portland ten years later, where he engaged in the manufacture of furniture. His present manufacturing plant is one of the largest of its kind in the world. This gift, therefore, is for the benefit of his home town.

Medical School Opens. The University of Oregon Medical School opened last month with an enrollment of two hundred students, of whom it is said at least fifty per cent are self supporting. For the first time in its history every phase of instruction is conducted on its own campus, except that attained at the Portland Free Dispensary.

Hospital Property Maintained. There has been a contest in Portland over the Hahnemann Hospital property. The question was whether the terms of the will of the donor of the property had been complied with in the construction of the hospital, which had not been completed within the specified period. The decision of the court continues the property for the hospital.

Hospitals Registered. Seven hospitals in Oregon, namely, Emanuel, Good Samaritan, St. Vincent's, Multnomah County, Portland Sanatorium, Portland Surgical in Portland and Sacred Heart hospital in Medford, have been placed on the approved list of the American College of Surgeons.

Addition to Hospital Staff. Dr. O. L. Asher, formerly of the Northwest State Hospital at Sedro-Woolley, Wash., has been appointed to the staff at the Eastern Oregon State Hospital at Pendleton.

The Hatchet is Buried. The controversy in the city health department of Portland was adjusted last month thru the agency of Mayor Baker, who carried the olive branch. Adjustment was made of the difficulty between Dr. George Parrish and Commissioner Mann. The office will continue under the supervision of the present health officer.

Appointed to Health Bureau. Dr. Mary Hazlett was last month appointed to a vacancy in the Portland city health bureau, caused by the resignation of Dr. Myra Brown-Tynar, who has held the office for several years.

Central Willamette Medical Society held a meeting at Corvallis, Oct. 4. Papers were read by Drs. C. H. Robins, Eugene; P. M. Joyce, Portland; and T. M. Bosworth, Corvallis.

Elected President. Dr. Earl Smith, coroner of Multnomah County, was last month re-elected President of Oregon State Coroners' Association, at a meeting held at Portland.

Dr. W. D. Butler, recently from Chicago, has located for practice at North Bend, where he will be associated with the Keizer Brothers.

Selected School Physician. Dr. D. R. Ross, until recently connected with the State Hospital at Salem, and now practicing in that city, has been selected as school physician in place of Dr. J. O. Mattis, resigned.

Dr. H. A. Canfield, of Drain, has moved for practice to North Bend.

WASHINGTON

Full Time Health Officer to be Appointed. After a long period of discussion, the county commissioners of Walla Walla county have determined upon a full time health officer. They have taken advantage of the offer of the Rockefeller Foundation to provide $5,000 which, with the county appropriation, will suffice to carry on the department of health for a year. The health officer will receive a salary of $3,600, with an assistant at $1,200. In addition there will be a nurse, two inspectors and a stenographer.

Physicians Licenses. A special meeting of the board of medical examiners was held at Olympia, Sept. 25, when thirty physicians were granted certificates to practice by reciprocity. They are as follows: F. N. Bejerken, W. Belknap, J. Christensen, I. M. Cohen, J. F. Cross, H. J. Flinn, G. A. Tuson, P. F. Guy, A. R. Hart, Ethel N. Hart, F. C. Hart, H. S. Holmesm, L. A. Hopkins, H. L. Hull, A. W. Hunter, Amy Kaukonen, A. H. Meador, W. T. McAdory, H. M. Nicholson, May M. Palmer, B. W. Provost, J. Scott, O. B. Simon, G. B. Smith, O. Smith, T. M. Stixrud, J. B. Stone, J. T. Wolf, J. Fremstad and O. Link.

Addition to Hospital Under Construction. An addition is being built to the Northern State Hospital at Sedro-Woolley, under the supervision of the superintendent, Dr. J. W. Dougthy. The building will cost $106,000. It is arranged in three wings and will serve as living quarters for the nurses, attendants and other hospital employees. It will contain 104 rooms, with assembly and amusement hall on the first floor. There will be three stories and a basement.

Nurses Home to be Built. A nurses' home is to be constructed in connection with St. Elizabeth's Hospital, Yakima, which will house about fifty student nurses. It will be erected on one corner of the hospital grounds and will be in the appearance of a large home. At present the nurses are housed in a wing of the hospital.

Hospital to be Completed. The board of directors of St. Luke's Hospital, Spokane, has authorized a bond issue of $225,000, which will complete the third and fourth floors of the new wing of the hospital. It will increase the hospital capacity about 75 beds, giving a total capacity for the hospital of 225 beds.

Hospital to be Enlarged for Women. Cushman Hospital, at Tacoma, known as U. S. Public Health Hospital No. 59, has been extended to care for disabled ex-service women in the Northwest. Two buildings will be set aside for the care of former nurses, yeomanettes, phone operators and other women enlisted in the army and navy. One will be used for tuberculosis cases and the other mental cases.

Addition to Tuberculosis Hospital. Oakhurst Sanatorium, at Elma, has been enlarged by the construction of a new ward for children containing sixteen beds. The work of construction and painting was donated by the various labor unions of Aberdeen, the responsibility for the building of the ward having been assumed by the Kiwanians of that city.

Hospital Sold. Monroe General Hospital, which has been maintained for several years by Drs. Soll and Stockwell, has recently been sold to Drs. Allison, of Tacoma, and J. S. Durant, of Snohomish.

A New Hospital. Dr. Albert Lessing, of Leavenworth, has opened a sanitarium at the foot of the Cascade mountains, equipped to care for all forms of sickness.

Hospital Superintendent Arrives. Dr. Leon M. Wilbor has arrived in Tacoma to take charge of the Neuropsychiatric U. S. Veteran's Hospital, under construction at American Lake. The names of the hospital staff will be announced from Washington in the near future. Eight attendants will comprise the staff together with twenty-five nurses, seven physicians, seven aids, two dietetians and two administrative assistants.

Medical Board Appointed. The United States Veteran's Bureau has appointed a medical board at Spokane, comprised of Drs. W. H. Morse, S. E. Rosenthal and F. L. Armstrong. This board will suffice to give the veterans more prompt attention and to determine their disability regarding pensions.

Wholesale Poisoning. The Parent-Teachers Association, of King county, had a luncheon at Ronald station, Oct. 13. About fifty soon became violently ill with acute gastroenteritis symptoms. Dr. I. C. Brown, who was present, had his hands full for the afternoon. The epidemic was attributed to eating string beans put up at home by the cold pack method.

Physician Become Author. Dr. A. H. Sawins, who has practiced in Spokane for the past fourteen years, has retired to devote his time to literary work. Aside from papers on medical topics he has published numerous short stories and other literary articles.

Doctor Attacks Burglar. Dr. E. P. Gardner, Seattle, was recently aroused from sleep by the presence of a burglar at his bedside who ordered "hands up." The doctor struck the burglar who ran from the room, pursued by the doctor with a gun. They exchanged shots on the stairway but the aim of neither was sufficiently accurate to bring down the other.

Dr. A. B. Shaw, who has practiced in Montana for the past nine years, has located for practice at the new city, Longview.

Dr. Mildred Purman, of Seattle, has gone East, where she will be absent for a year pursuing special lines of study.

Dr. R. H. Finley, who has practiced for fifteen years at Oklahoma, has located for practice at Wenatchee.

Dr. W. P. Rice, who has hitherto practiced at Tacoma, has established an office at Puyallup.

IDAHO

New Hospital Under Construction. A new hospital is being built at St. Maries by Dr. O. D. Platt, to cost $15,000. It is to be of frame construction containing fourteen rooms, and containing the latest hospital conveniences and appliances.

New Hospital Opened. The new hospital at Idaho Falls, was opened for patients, Oct. 22. Its official name is the Latter-Day Saints Hospital, under direction officially of the church. It will be opened for the reception of patients of reputable physicians.

New Hospital Opened. Dr. J. W. Davis has opened a temporary hospital at Mt. Hope, where he can care for railroad and construction gang patients. It is reported that the railroad company will soon put up a small emergency hospital.

Dr. M. H. Tallman, one of the best known physicians of Boise, who has practiced in that city for the past twelve years, has moved to Miami, Florida, where he will be connected with a sanitarium.

Dr. G. G. Fitz, who formerly practiced at Paul, has located for practice at Bancroft.

Dr. G. G. Verberyck, who has practiced for several years at Gooding, has moved for practice to Glenns Ferry.

Dr. H. W. Wentworth, who has practiced for the past ten years at Stites, has moved for practice at Greer.

OBITUARY

Dr. L. Woodruff, of Asotin, Wash., died Sept. 23. His death was sudden and unexpected, altho he had been ill for several weeks. He was born in 1859 in Ontario, Canada. After completing the common schools in Brougham, he studied at Pickering College. After graduation he entered Trinity Medical College, in Toronto, where he studied for two years. He graduated from Detroit Medical College in 1883. He located for practice at Troy, Mich., where he remained until 1889. He then moved to Asotin, where he practiced until his death. After thirty-five years of practice he was esteemed by a large circle of friends and admirers.

Dr. S. W. Mowers, Tacoma, Wash., died Sept. 5, as a result of cerebral hemorrhage. He was born at Mechanicsburg, Pa., in 1870. He received his A. B. and A. M. degrees at Wabash University. He graduated from the medical department, University of Michigan, in 1896. He was Assistant Chief Surgeon at the Northern Pacific Hospital at Brainard, Minn., until the Spanish-American War, when he enlisted in the U. S. Army as First Lieut. Med. Corps, 1897. At the conclusion of the war he returned to Brainard in 1898, where he remained until 1906. He was then appointed chief surgeon to the Northern Pacific Hospital in Tacoma, where he remained until 1919. He then moved to Seattle and engaged in private practice until two years ago, when he suffered a cerebral hemorrhage, since which time he did not practice. He was president of the Washington State Medical Association in 1920. He was prominent in Masonic circles.

Dr. Alfred H. Coleman, of Tacoma, Wash., died in that city, Oct. 3. He was born at Galt, Ontario, in 1861. After preparatory school studies, he studied law which he practiced for a time. Later he studied at Toronto University and graduated from McGill Medical School in 1890. That year he located in Tacoma, where he practiced till his death. He was a prominent member of the medical profession, known and loved by all. He was the eighth president of the county medical society.

Dr. W. S. Frost, of Spokane, Wash., died Sept. 29, as a result of injuries received August 20, when his automobile collided with a train at a railroad crossing. He was forty-six years of age. He had practiced in Spokane for fifteen years as an eye, ear and nose specialist. He was one of the well known and highly respected citizens of that city.

Dr. J. W. Thomas, of Seattle, Wash., died Oct. 7, as a result of diabetes and complicating diseases. He was born at Stayton, Ore., in 1868. He obtained his medical education at Jefferson Medical School, Philadelphia, and located for practice in Seattle in 1904. He was prominent in Masonic circles and church work. He was well known among the medical profession and had a wide circle of friends.

Dr. C. A. Thomas, of Fredoria, Kas., died at Albany, Ore., October 11, while visiting in that city. He was born at Cottonwood Falls, Kas., in 1880, and received his medical education at the University of Kansas.

Dr. W. A. Mosier, of Tekoa, Wash., died Oct. 20, at a sanitarium in Portland, after an illness of several months. He practiced in Tekoa for twenty-eight years. He had always taken an active part in civic matters.

The New Competition

Many progressive manufacturers and merchants say that the cut price bait is losing its attraction. They are paying less attention to this method of getting more business, and more attention to the idea of quality merchandise service. They believe the results so far achieved justify the statement that their customers will be better served and their own profits enhanced by giving more attention to quality, and less to price.

Real service is what counts. While many people will shop about for prices, the great majority are better satisfied with quality merchandise and good service at a fair price. This makes for confidence—the cornerstone of satisfaction.

Mr. Charles Wesley Dunn, Counsel for a number of large manufacturers in this country, has given this problem a great deal of thought. His conclusion is that we are now approaching the time when the real competition will be in merchandise and service rather than in price.

As a nation, we have developed to the highest degree the science of quantity production. Now, with characteristic American progression, it is only natural that we are experiencing a very definite trend toward the development of quality production.

REPORTS OF SOCIETY MEETINGS

WASHINGTON STATE MEDICAL ASSOCIATION

MINUTES OF THE THIRTY-FOURTH ANNUAL MEETING OF WASHINGTON STATE MEDICAL ASSOCIATION, HELD AT DAVENPORT HOTEL, SPOKANE, WASH., SEPT. 20-22, 1923.

The thirty-fourth meeting of the Washington State Medical Association was convened at the Davenport Hotel, Spokane, Wash., Sept. 20, 1923.

HOUSE OF DELEGATES

First Session

The first meeting of the House of Delegates was called to order by the President at 10:00 a. m. On calling the roll a quorum was found present, the following delegates answering to their names:

J. H. O'Shea, Spokane
C. B. Ward, Spokane
C. H. Thompson, Seattle
Arthur Betts, Spokane
D. A. Nicholson, Seattle
C. R. McCreery, Tacoma
J. B. Munly, Spokane
Elmer Hill, Walla Walla
S. S. Oppenheimer, Spokane
C. H. Weisman, Spokane
H. P. Marshall, Spokane
F. Epplen, Spokane
R. T. Congdon, Wenatchee
F. T. Maxson, Seattle
W. F. Hoffman, Seattle
C. W. Sharples, Seattle
John Hunt, Seattle
Arthur Burns, Seattle
E. W. Young, Seattle
C. S. Bumgarner, Davenport
C. R. McCreery, Tacoma
H. G. Willard, Tacoma
P. A. Remington, Tacoma
A. P. Duryee, Everett
Geo. Downs, Spokane
Chas. Doland, Spokane
Chas. Butts, Spokane
J. R. Morrison, Bellingham
R. W. Smith, Walla Walla
H. H. Skinner, Yakima

It was moved that the minutes of the last annual session be adopted as published.

The Secretary called attention that an appeal had been made to the A. M. A. in connection with the election of delegates to the National Association and that the Judicial Council of the A. M. A. ordered that our delegates should be as follows:

	Term Expires
Dr. F. Epplen, Spokane	1923
Dr. D. H. Palmer (alt), Seattle	1923
Dr. D. E. McGillivray, Port Angeles	1924
Dr. P. D. McCornack (alt), Spokane	1924

Excepting the above the minutes were as published.

The minutes were then adopted as amended by the appeal to the A. M. A.

The Secretary stated that it was customary to have the books of the Association examined by a certified public accountant on Jan. 1 and July 1 of each year and that there were two audits since the last annual meeting.

FINANCIAL REPORT FOR YEAR 1922

Exhibit "A" Association Fund

RECEIPTS

From membership dues for year ending 12, 31, '22

Chelan County Society	14	Members $	56.00
Cowlitz County Society	5	Members	20.00
Clallam County Society	6	Members	24.00
Grays Harbor County Society	13	Members	92.00
King County Society	403	Members	1,612.00
Lewis County Society	14	Members	56.00
Lincoln County Society	10	Members	44.50
Pierce County Society	106	Members	434.00
Skagit County Society	18	Members	72.00
Snohomish County Society	36	Members	144.00
Spokane County Society	133	Members	532.00

Stevens County Society	7 Members	28.00
Thurston-Mason County Society	13 Members	52.00
Walla Walla County Society	27 Members	108.00
Whatcom County Society	32 Members	128.00
Whitman County Society	23 Members	92.00
Yakima County Society	42 Members	184.00
	916	$ 3,668.50
Half of interest received, Schedule I		272.68
Balance January 1, 1922		4,031.51
Total receipts carried forward		$ 7,972.69

DISBURSEMENTS

Northwest Medicine subscriptions	$ 913.00
E. J. Cannon, attorney expenses	175.00
Dr. W. D. Read, expenses to Spokane	31.78
Dr. W. F. Hoffman, expenses to Spokane	31.78
Dr. C. F. Engels, expenses to Spokane	35.28
Dr. H. E. Coe, expenses to Spokane	32.60
Dr. D. A. Nicholson, expenses to Spokane	25.00
Dr. M. G. Sturgis, expenses to Spokane	35.78
Dr. Chas, Hunter, expenses to Spokane	32.78
Half of general expense Schedule II	1,169.08
Dr. Baumgarter, Lincoln Co. overpay, dues	4.50

Convention Expenses

Lumbermen's Printing Co., programs	75.00
Dr. W. D. Read, Postcard Ptg., etc	69.08
Smith Kenny Co., Dodgers	26.25
Cliff Sign Co., Sign	3.50
Clifford Allbut, Ptg. postcards	16.50
Hall rent	200.00
Tacoma Daily Ledger, Adv	6.25
New Tribune, Adv	7.50
Tacoma Tribune, Adv	5.10
Depue-Morgan, Photo slides	57.50
Turner Richards, Operators	10.00
Miss Cooper, Expenses	7.70
Total Expenses	$ 2,970.96
Balance to credit this fund	5,001.73

LEGAL DEFENSE FUND

Exhibit "B"

RECEIPTS

Subscriptions from the following counties for the year ending Dec. 31, 1922

Asotin	1 Subscriber	$ 10.00
Benton	1 Subscriber	10.00
Chelan	3 Subscribers	30.00
Clarke	4 Subscribers	40.00
Clallam	4 Subscribers	40.00
Cowlitz	4 Subscribers	40.00
Grays Harbor	10 Subscribers	100.00
King	160 Subscribers	1,600.00
Kittitas	3 Subscribers	30.00
Kitsap	6 Subscribers	60.00
Klickitat	1 Subscriber	10.00
Lewis	6 Subscribers	60.00
Lincoln	5 Subscribers	50.00
Okanogan	1 Subscriber	50.00
Pacific	6 Subscribers	60.00
Pierce	47 Subscribers	470.00
Skagit	6 Subscribers	60.00
Snohomish	17 Subscribers	170.00
Spokane	50 Subscribers	500.00
Stevens	7 Subscribers	70.00
Thurston Mason	2 Subscribers	20.00
Walla Walla	13 Subscribers	130.00
Wahkiakum	1 Subscriber	10.00
Whatcom	14 Subscribers	140.00
Whitman	3 Subscribers	30.00
Yakima	27 Subscribers	270.00
Half of interest received, Schedule I		272.68
Balance January 1, 1922		6,320.94
	402	$ 4,020.00

Total carried forward		$10,613.62

DISBURSEMENTS

Chas. O. Bates. legal services and expenses—		
Clevenger vs. Remecke	$ 106.47	
Edwards vs. McLafferty	68.55	
Jerisich vs. Steigel (Ponder and Forney)	107.00	
Cornwell vs. Sleischer	811.19	
Jones vs. Remecke	557.77	
Miles vs. Hoffman	513.36	
		$ 2,164.34
Edward J. Cannon, legal services and expenses—		
Say vs. Northorp	520.60	
Howatt vs. Carthwright	510.75	
Roher vs. Ewell	250.00	
		1,281.35
Lumbermen's Printing Co., Sub. Blanks		12.00
Half of general disbursements, Schedule II		1,169.07
		$ 4,626.76
Balance to credit this fund		5,986.86

Exhibit "C"

RECAPITULATION

Cash and securities on hand Jan. 1, 1922		$10,352.45
Gross receipts for the year 1922—		
Membership dues	$ 3,668.50	
Legal Defense subscriptions	4,020.00	
Interest Liberty Bonds	369.96	
Profit on sale of Victory Bonds	175.40	
	$ 8,233.86	

DISBURSEMENTS

Association expenses	$ 2,970.96	
Legal Defense expenses	4,626.76	
	$ 7,597.72	
Excess receipts over expenditure		636.14
Net balance on hand		$10,988.59

Balance on hand made up as follows:

Cash			70.00
Balance open account, Seattle National Bank			622.79
Liberty Bonds—	Par	Cost	
1st issue	$2,000.00	$1,954.00	
2nd issue	7,000.00	6,841.80	
3rd issue	500.00	500.00	
4th issue	1,000.00	1,000.00	
			10,295.80
	$10,500.00		
			$10,988.59

Schedule I

GENERAL RECEIPTS

Interest on Liberty Bonds	$ 369.96
Profit on sale of Victory Bonds	175.40
	$ 545.36

Schedule II

GENERAL DIBURSEMENTS

Miss Evelyn Cooper, Lay-Sec'y salary	$ 1,312.50
Miss L. M. Edwards, Lay-Sec'y salary	250.00
Louis E. Smith, C. P. A., Auditing	325.00
Metropolitan Bldg. Co., January rent	20.00
Dr. C. H. Thomson, Feb. to Dec. rent	220.00
Lydia Anderson, Map	10.00
Gilliam-Bird Co., Files	2.65
Renfro-Wadenstein Desk Co., Letter files	44.00
Remington Typewriter Co., Repairs	22.50
Miss Evelyn Cooper, Postage	70.00
Miss Evelyn Cooper. Expense	50.50
Renfro-Wadenstein Desk Co., Repairing desk	3.00
	$ 2,338.15

FINANCIAL REPORT FOR JAN. TO JULY, 1923

Exhibit "A" Association Fund

Balance January 1, 1923 .... $ 5,001.73

RECEIPTS

From membership dues for six months ending 6, 30,'23

Chelan County Society	17 Members	$ 68.00
Cowlitz County Society	7 Members	28.00
Grays Harbor County Society	25 Members	100.00
King County Society	291 Members	1,164.00
Lewis County Society	17 Members	68.00
Lincoln County Society	1 Members	4.00
Pierce County Society	123 Members	492.00
Skagit County Society	17 Members	68.00
Snohomish County Society	39 Members	156.00
Spokane County Society	188 Members	752.00
Stevens County Society	9 Members	36.00
Thurston Mason County Society	14 Members	56.00
Walla Walla County Society	25 Members	100.00
Whatcom County Society	30 Members	120.00
Whitman County Society	14 Members	56.00
	817	$ 3,268.00
Half of interest received (Schedule I)		122.18
Balance January 1, 1923		5,001.73
		$ 8,391.91

DISBURSEMENTS

Contact Committee expenses, Meeting, Seattle, 2, 1,'23

Dr. C. W. Sharples	$ 14.60	
Dr. T. D. McCornack	31.78	
Dr. Frederick Epplen	38.78	
Dr. John O'Shea	20.51	
		$ 105.67
Half of general expenses (Schedule II)		557.10
Northwest Medicine subscriptions		792.00
		$ 1,454.77
Balance to credit this fund 6, 30, '23		6,937.14
Increase		1,935.41

Exhibit "B"

LEGAL DEFENSE FUND

Balance Jan. 1, 1923 .... $ 8,242.68

RECEIPTS

Subscriptions from the following counties for the six months ending June 30, 1923:

Benton	1 Subscriber	$ 10.00
Chelan	2 Subscribers	20.00
Clarke	2 Subscribers	20.00
Cowlitz	1 Subscriber	10.00
Grays Harbor	5 Subscribers	50.00
King	75 Subscribers	750.00
Kittitas	2 Subscribers	20.00
Kitsap	3 Subscribers	30.00
Klickitat	1 Subscriber	10.00
Lewis	2 Subscribers	20.00
Pierce	11 Subscribers	110.00
Skagit	2 Subscribers	20.00
Snohomish	8 Subscribers	80.00
Spokane	26 Subscribers	260.00
Stevens	6 Subscribers	60.00
Walla Walla	6 Subscribers	60.00
Wakiakum	1 Subscriber	10.00
Whatcom	6 Subscribers	60.00
Whitman	1 Subscriber	10.00
Yakima	6 Subscribers	60.00
	167	$ 1,670.00
Half of interest received (Schedule I)		122.19
Balance Jan. 1, 1923		8,242.68
		$10,034.87
Disbursements (Schedule III)		3,160.47
Balance to credit the fund 6, 30, '23		$ 6,874.40
Decrease		$ 1,368.28

RECAPITULATION

Exhibit "C"

Cash and Securities on hand 1, 1, '23		$10,988.59
Gross receipts Jan. 1 to June 30, 1923:		
Membership dues Exhibit "A"	$ 3,268.00	
Legal Defense subscriptions Exhibit "B"	1,670.00	
Interest on Liberty Bonds Schedule I	244.37	
	$ 5,182.37	
DISBURSEMENTS		
Association expenses, Exhibit "A"	$ 1,454.77	
Legal Defense expenses Schedule III	3,160.47	
	$ 4,615.24	
Excess receipts over disbursements		567.13
Net balance on hand 6, 30, '23		$11,555.72

Balance on hand made up as follows:

Balance open account Seattle National Bank			1,259.92
Liberty Bonds—	Par Value	Cost	
1st issue	2,000.00	1,954.00	
2nd issue	7,000.00	6,841.80	
3rd issue	500.00	500.00	
4th issue	1,000.00	1,000.00	
			10,295.80
	$10,500.00		
			$11,555.72

GENERAL RECEIPTS

Schedule I

Half to Medical Association fund exhibit "A"	$ 122.18
Half to Legal Defense fund exhibit "B"	122.19
Interest on Liberty Bonds	$ 244.37

GENERAL DISBURSEMENTS

Schedule II

Miss L. M. Edwards, 5 mo. lay sec'y	$ 575.00
Miss May Rosenberg, 1 mo. lay sec'y	125.00
Miss Mildred Hughes, 1¼ mo. lay sec'y	154.20
Postage	50.00
Dr. C. H. Thompson, Jan. Feb. March Rent	60.00
Louis E. Smith, auditor	150.00
	$ 1,114.20
Half to Medical Association fund Exhibit "A"	$ 557.10
Half to Legal Defense fund Schedule III	$ 557.10

LEGAL DEFENSE DISBURSEMENTS

Schedule III

Dr. C. D. Hunter		$ 50.00
Stenographer copy State and Providencial Medical Aid Laws		
Lumbermen's Printing Co. 1,000 certificates		25.00
Lumbermen's Printing Co. 1,000 blanks		15.00
Mrs. R. J. Cassell refund		7.50
Half of general expenses Schedule II		557.10
Lawson vs. Whiting:		
Walter S. Fulton legal	$ 50.00	
Less one-half paid by Aetna Ins. Co.	25.00	
		25.00
Lapp vs. Davidson:		
Walter S. Fulton legal		50.00
Gleason vs. Sayer:		
Walter S. Fulton legal	$ 53.00	
Less one-half paid by Aetna Ins. Co	26.50	
		26.50
Taake vs. Berry:		
Walter S. Fulton legal	$ 50.00	
Lless one-half paid by Aetna Ins. Co.	25.00	
		25.00

Norma Martin vs. C. A. Rimeke:		
Bates and Peterson (legal and expenses)	$658.60	
Less one-half paid by Aetna Ins. Co.	329.30	
		329.30
Miles vs. Hoffman:		
Bates and Peterson legal		150.90
Stickney vs. Congdon:		
D. A. Shiner legal	$501.20	
Dr. F. S. Bournes expert witness	440.10	
		941.30
Woods vs. O. T. Batcheller:		
E. J. Cannon legal	$200.00	
Less one-half paid by Aetna Ins. Co.	100.00	
		100.00
Carpenter vs. Garvey:		
Hal H. Cole legal		75.00
Kemp vs. McGillivray:		
J. Speed Smith legal and expenses	$276.00	
Dr. H. T. Buckner expert witness	85.00	
Dr. Lile expert witness	85.00	
Nina Sweryns reporting	82.85	
	$528.85	
Less one-half paid by Aetna Ins. Co.	264.43	
		264.42
Hewitt vs. Cartwright:		
J. J. Cole statement of facts	$207.75	
Dr. G. K. McDowell expert witness	280.85	
		488.60
Evans vs. Hackett:		
H. O. Price insurance adjuster		29.85
		$ 3,160.47

(Signed) L. E. Smith, Auditor.

It was moved that an auditing committee be appointed to review the Secretary-Treasurer's report. Seconded and carried.

The President then appointed the following committee: Drs. A. E. Burns, Chairman; P. A. Remington, S. S. Oppenheimer.

The Secretary read a letter from the Seattle National Bank, relative to authority for signing checks for the Association, and recommended the resolution be adopted.

It was moved and adopted that a committee be appointed to examine the communication. The following were appointed by the President: Drs. A. E. Willard, R. W. Smith, Elmer Hill.

The Secretary read a letter from the American Medical Association, signed by Wm C. Woodward, executive secretary, Bureau of Legal Medicine and Legislation, regarding legislation for the control of chemical laboratories in the state.

It was moved and adopted that a committee be appointed to review facts in letter. The following were appointed by the President: Drs. J. R. Morrison, Chairman, C. L. Hoeffler, R. T. Congdon.

The Secretary read the following communication from the American Society for the Control of Cancer:

September 8, 1923.

Dr. John H. O'Shea, President,
Washington State Medical Association,
Spokane, Washington.

Dear Doctor O'Shea:

It again becomes our privilege to address you as has been done for several years past, with reference to the campaign against cancer and to solicit the cooperation and stimulation which your organization has given in the past and which we hope may continue and strengthen from year to year.

This Society is most humble when it exhorts the organized profession to renew efforts against this disease, for it realizes that no public health problem can succeed without the hearty and whole-souled cooperation of the medical fraternity. It also appreciates to the fullest the part played by the profession, particularly in the more recent years, in this important fight and its only justification in calling for a repetition of past efforts is that the recorded cancer death rate continues to go up and that the only hope of arresting it and heading it downward is education and more education. The medical man alone has the facts. He only is heeded by the public and it is therefore confidently expected that he will lead in the attack on this disease.

May we request that the movement being conducted by this Society again have the formal endorsement of each state and provincial medical association at its next meeting and that such encouragement as may be brought to bear upon the affiliated county societies be exerted at that time? Most county societies will readily conform to any action taken by the parent organization and without such endorsement and without real assistance from the county units the campaign cannot but fail to reach its ultimate goal, namely, the united effort of every man in the ranks of the regular profession.

I am on behalf of the Society,

Very sincerely yours,

(Signed) F. J. Osborne,
Executive Secretary.

Motion was adopted that the movement be endorsed.

DECEASED MEMBERS

Dr. Thomson reported the decease of the following members, and suggested that suitable action be taken:

Dr. Warren Frederick Brown of Tacoma, graduate of Bellevue 1889, deceased January, 1923.

Dr. Rufus J. Cassel, of Mt. Vernon, graduate of Minnesota 1901, deceased January, 1923.

Dr. Wm. Sylvia Durand, of Everett, graduate of Michigan 1899, deceased October, 1922.

Dr. Elmer E. Heg, of Kent, graduate of Bellevue 1887, deceased September, 1922.

Dr. Edward Maguire, of Pullman, graduate of Kansas City 1900, deceased January, 1923.

Dr. H. H. Rust, of Gig Harbor, graduate of Vermont 1876, deceased, 1922.

Dr. Fred S. Sandborg, of Seattle, graduate of Barnes 1902, deceased September, 1922.

Dr. Frederick J. Schug, of Tacoma, graduate of Columbus 1876, deceased February, 1923.

Dr. Lea Arbor Scase, of Centralia, graduate of Minnesota 1907, deceased November, 1922.

Dr. Chas. S. Cope, of Tacoma, graduate of Cincinnati 1875, deceased April, 1923.

Dr. Wm. E. Lewis, of Bothell, graduate of Jefferson 1878, deceased May, 1923.

Dr. Wm. McHarrie, of Seattle, graduate of Chicago, 1895, deceased March, 1923.

Dr. Thomas Sloan, of Bellevue, graduate of Louisville 1877, deceased March, 1923.

Dr. Wm. T. Miles, of Sedro-Woolley, graduate of Jefferson 1888, deceased April, 1923.

Dr. Saxe W. Mowers, of Tacoma, graduate of Michigan 1896, deceased September, 1923.

Dr. Geo. W. Libby, of Spokane, graduate of Maine 1876, deceased June, 1923.

The following Committee was appointed by the President: Drs. W. D. Read, E. W. Young, J. B. Munly.

The Secretary read the following letter from Dr. C. A. Smith, editor of Northwest Medicine:

September 15, 1923.

To the House of Delegates,
Washington State Medical Association,
Spokane, Wash.

Gentlemen:

During the past year a number of requests have been received from members of the Washington and Oregon state medical associations that Northwest Medicine should be enlarged so that it could be made more attractive and of more use to the profession of the Northwest. Suggestions have been made as to several features that might be desirable. During the year eight pages have been permanently added, making it this much larger than at any previous time.

The reply has always been made that enlargement is limited by the journal's income. Expansion to the present time has been made possible by increased revenue from advertisements and it is natural to expect there will be some increase from this source in the future.

The other source of income is from subscriptions, received from the members of the state associations represented by the journal. During the past year there has been discussion of increasing the subscription price from one to two dollars per member. I think there are very few, if any, state association journals that have a subscription price less than two dollars annually. About a year ago the council of the Oregon state society, without consulting the management of Northwest Medicine, provided for the increased subscription to two dollars in arranging for the increased schedule of annual dues to their society. This increase was adopted at their annual meeting in July. It was understood, however, that it would not be effective unless the same rate were adopted by the other associations connected with the journal.

The matter was presented to the Idaho association at its meeting in June. After some discussion it was voted not to agree to this increase at present, several reasons for this action having been reported by different members. Later I was assured by leading members of the association that such an increase would be later adopted if similar action were taken by the other state societies.

As a sidelight on the matter of journal subscriptions the action of the California society is suggestive in connection with the Utah association. The latter has adopted the journal of the California society as its official publication. They are to pay a rate of $2.40 per member which is given as the actual cost of publication.

At the present time the actual cost per copy per year of Northwest Medicine for 2500 copies is about $3.00. If we issued double that number it would approach the issue of the California journal. The cost per copy would be very much reduced, probably similar to that of the California journal.

At the annual meeting of the trustees of Northwest Medical Publishing Association, which is the corporate body publishing Northwest Medicine, it was voted to recommend to the state associations which it represents, that the annual subscription be raised from one to two dollars. As already mentioned, the matter had been brought before the Oregon and Idaho associations. In the agreement with the Montana association it was stated that such an increase might later become effective, in which case the same rate would be applied to that association.

It is requested that your body take this matter under consideration and take such action regarding it as you may deem best.

Respectfully yours,
(signed) Clarence A. Smith,
Secretary Northwest Medical
Publishing Association.

It was moved that the dues be raised to $5.00 per capita, but on further discussion motion was withdrawn. Motion was adopted that the President appoint a committee to investigate this matter. The following were appointed: Drs. D. A. Nicholson, Chairman, C. R. McCreery, C. M. Doland.

ANNUAL REPORTS OF COMMITTEES

The annual reports of committees were then called for.

The Arrangements Committee reported that there would be a luncheon at the Hotel, for the visiting ladies, Sept. 21, and that there would be a dinner dance Friday night. It was also reported that there would be a dinner for the members of the House of Delegates and the Contract Committee at Spokane Club, Thursday evening, Sept. 20.

The Program Committee presented the program.

The Publication Committee reported that its transactions had been published in Northwest Medicine.

The reports of the **Committee on the Medical Aid Act and the Industrial Relations Committee** were held over until the afternoon session.

The Executive Committee reported the transactions of the usual routine business. The Secretary stated that in the past two or three years a number of subscriptions to the Defense Fund had been dropped and that at the present time there were less than 400 in good standing which hardly gave an insurable average. At present Defense is on a voluntary selective basis. An effort must be made to increase the number of subscribers through individual effort, as it was not feasible to attempt to collect through the component societies.

Dr. F. Epplen read the following articles from the A. M. A. minutes on the Legal Defense question:

DEFENSE AND INDEMNITY IN MALPRACTICE SUITS

At the St. Louis Session in May last, the Reference Committee on Reports of Officers said: "We approve legal defense indemnity in malpractice suits, and the Board of Trustees is requested to report a concrete plan at the next annual session." This report was adopted by the House of Delegates. The duty of investigating the situation with a view to the formulation of the plan requested was assigned to the Bureau of Legal Medicine and Legislation. Letters have been sent to each constituent association to learn the nature and extent of the medical defense service furnished by it. From six, no replies have been received. On the remainder, thirty-two, representing a membership of 75,324, provide legal defense, and of these, one, representing a membership of 3,335, for a specified annual premium indemnifies such of its members as subscribe for the service against loss through the award of damages. Fifteen constituent associations representing a membership of 8,355, provide neither legal defense nor indemnity.

Twenty-one constituent associations furnished information as to the financing of their legal defense activities. In one state, where such service has been maintained for fourteen years, the per capita allotment to the medical defense found has never exceeded 75 cents, and during 1918-1919 was reduced to 25 cents; and yet the fund contains a substantial balance at the present time. In one other state, 75 cents is set aside for the medical defense fund, out of the dues paid by each member. Four states set aside out of the dues, or collect, $1.00 per member; four set aside or collect $2.00; one sets aside $3.00; one collects $5, and one collects $7. In one state the fund is made up by voluntary contributions of $10.00 each. In the other states from which replies were received, the expenses of medical defense are paid as needed out of the general funds of the association, apparently no special allotment for that purpose being made. In the one state in which indemnity is provided, the cost per subscribing member per annum is $30.00, and in one year an assessment of $10.00 per member was levied in addition.

The returns are not sufficiently complete to permit a statement of cost to be made on the basis of the number of members actually eligible for medical defense service. Computations have been made, therefore, on the basis of the total membership of the associations reporting the cost of operations. Such operations include activities outside of cases pending in trial and appellate courts, and in stating costs the number of court cases so pending have been given merely as indexes to the volume of work done. In the absence of complete information, it has been deemed best to omit from the table the names of the states to which the figures relate; their publication would seem to come properly in a table giving data for all states, and the publication of such a table is not yet feasible. It will be noted that the per capita cost during 1922, the year of these figures, varied from $0.04 to $4.13.

In reply to the direct question, "In what ways, if any, can the American Medical Association best serve its constituent associations component societies, and individual members in the matter of protection and defense against claims based on alleged malpractice?" various answers were received, of which the following are fair illustrations:

"Make it unpopular for one physician to testify against another. The cause of most of our cases is due to unguarded comment of one physician regarding the work of another."

"By preaching in and out of season the value of physicians of loyalty to each other. Over 50 per cent of suits that attain court life are due to jealousies and factional fights among the profession. Probably 45 per cent of the remainder of the suits are due to loose talking and criticism of treatment given patients of which the physician has no knowledge whatever aside from hearsay."

"As malpractice defense is so much of a local matter, it seems as if the state society were a better agent to care for this than the national organization."

"By educating the doctors to stand together. Possibly by providing indemnity."

"Some states undertake successfully auto insurance for the profession and carry on the business very satisfactorily and at a much less cost than insurance companies. There seems no good reason why the American Medical Association could not carry on cheaply and successfully insurance to protect the profession generally, if they comply with the requirements."

"Do not believe it would be wise or practical (for the American Medical Association to enter the field) as conditions are different in nearly every state."

"Only by making defense a national matter instead of a state matter."

"By furnishing briefs."

"Try to educate its members not to instigate suits by careless remarks to a patient about a previous physician. I cannot speak for other states, but............ is large enough and has sufficient members to take care of itself."

There have been correspondence and conferences with some of the more important companies engaged in medical defense insurance, but without developing any matters or principles other than appear from the foregoing statements.

So far as any conclusion may be drawn from the information now on hand, the following is submitted:

1. There is no evidence yet available to show that the American Medical Association could wisely undertake the organization of a medical defense service for its Fellows and members, or that services of this character cannot be best maintained by the constituent associations.

2. There is no evidence, yet, to show that the American Medical Association could wisely undertake to organize an association, mutual or otherwise, to indemnity Fellows and members of the Association against loss through judgments rendered in malpractice suits.

3. It is possible that the American Medical Association might serve its constituent associations by assembling records, not merely decision, of malpractice cases, including records of proceedings in both inferior courts and appellate courts, and analyzing them from both medical and legal standpoints; and by the record of such analyses make available to constituent associations the procedure adopted successfully, or unsuccessfully, in cases that have come to trial.

The foregoing suggestions are submitted for consideration, in the hope that by discussing them something of value may be developed to guide the Bureau of Legal Medicine and Legislation in its further duties and activities in this field. Its inquiry into the relations of the national association to the state associations will be continued unless instructions be issued to discontinue it.

After lengthy discussion, in which no definite conclusion was reached, the House adjourned until 1:30 p. m.

(To be Concluded)

KING COUNTY MEDICAL SOCIETY

Pres., C. E. Hagyard, M. D.; Secy., B. F. Hain, M. D.

The general meeting of King County Medical Society was held in the Public Safety Building, Seattle, at 8:15 p. m., Oct. 1, with Pres. Hagyard in the chair. Minutes of the previous meeting were read and approved.

Dr. Hagyard introduced Mr. Albert Lundin who spoke in behalf of the Social Welfare League. He described the work done by the society and stated that the idea of the League was not to give charity but social service.

The applications of Dr. A. H. Winkel and J. G. Byrne were read.

Dr. Torlief Torland gave a talk regarding his European trip. As most American physicians visiting Europe confine their attention to countries other than Norway, he was praticularly interested in the work done in that country. He spoke particularly concerning the medical work done in Christiana. During the last year or two, on account of the Socialist party, several important laws were passed, one of which made it possible for anyone to get free treatment regardless of income and another provided for sick benefits for everyone.

He spent some time in Berlin, since this was the most important medical center of Germany. At Freiburg he was obliged to pay an admission fee before he could enter the clinic. At Heidelberg Dr. Endolin, who is the best general surgeon in Germany, uses silk for suturing, a sharp cutting needle and a great deal of spinal and local anesthesia. At Freiburg he spent two or three months studying twilight sleep under the instruction of the originators of this line of work. He saw over 100 cases delivered by this method and had never seen a blue baby.

Dr. J. C. Thompson, U. S. N., gave a talk on "Trephining among Primitive Peoples." His illustration showed many wounds of the head which were apparently acquired during warfare and were characteristic of the weapons used. Many of the instruments used in operating were of hard stones which were used to saw thru the different tables of the skull.

PIERCE COUNTY MEDICAL SOCIETY

Pres., J. P. Kane, M. D.; Secy., W. B. Penney, M. D.

The regular meeting of Pierce County Medical Society was held in its rooms at Tacoma, Wash., Oct. 9. Minutes of the previous meeting were read and approved.

PROGRAM

"Side Lights on Medical History—Dr. Mary Walker", Dr. Mary Perkins.

"A Banker's Advice to Doctors", Mr. S. M. Jackson, President of the National Bank of Tacoma.

"In and Out of Court", Major Bates.

A rising vote of thanks was given to Mr. Jackson and Major Bates for their excellent and interesting talks.

Dr. W. N. Keller gave a few remarks on "Industrial Medicine and its Future".

Dr. H. J. Whitacre spoke of the work of the Public Health League.

Dr. Hunter gave a report on the new fee schedule as adopted by the State Industrial Commission.

Applications of Drs. E. D. McCarty and Anna Wallace were read.

The following resolutions in regard to the death of Dr. Alfred H. Coleman were read and accepted:

To the Members of the Pierce County Medical Society:

On last Wednesday, Oct. 3, the Pierce County Medical Society lost by death one of its earliest and most loved members, Dr. Alfred Henry Coleman. He was born into a home of refinement and culture Oct. 31, 1861, which would make his age sixty-two, had he lived till the last day of this month.

After his preparatory studies at Galt School, Galt, Ontario, he studied law, which was the profession his father had designed for him. But, not happy in the law as a life work, he soon forsook it, matriculated at Toronto University and entered McGill as a medical student, from which university he graduated in 1890. That same fall he came to Tacoma which has been his home ever since.

Dr. Coleman was a classical scholar and enjoyed the finest things in literature as well as in music, of which he was very fond. At the same time he had a keen relish for sports, could handle a canoe with skill, was an enthusiastic lacrosse player, an ardent hunter, a lover of dogs, and—what usually looms large in such a nature—had a sincere fondness for children. No better gauge of a man's heart is known than a love of children, and Dr. Coleman had no greater pleasure than to give happiness to a child.

Dr. Coleman became identified with the Pierce County Medical Society in the early nineties, and was its eighth president. He was a physician of the kind we love to think of, never allowing science, austere and impersonal as she is, to overshadow the moral and spiritual qualities which play so large a part in life, and are found at the heart of the art of medicine. Much more may be said, but those who knew Alfred Coleman need no token of remembrance, and the younger members of our society may catch from these words a glimpse of the character, dignity and loving heart of one who was as a foundation stone of our society.

Be it resolved that this memorial to Alfred Henry Coleman be inscribed in our minutes and a copy sent to his family.

James R. Yocum
G. C. Wagner
C. Quevli.

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., F. Adams, M. D.; Sec'y, J. F. Harter, M. D.

A meeting of the Academy was held in Tacoma, Wash., Oct. 16. Dinner at the Tacoma Hotel at 7 p. m., then adjourned to the office of Drs. Cameron and Hillis.

The following cases were shown: (1) Optic atrophy, hereditary lues (Dr. Davies). (2) Tumor of left upper eyelid probably angioma (Dr. Bell). (3) Suspected brain tumor (Dr. Hillis). (4) Neuroretinitis (Dr. Cameron).

Paper of the evening by Dr. Richard Perry, entitled "Operation for Chronic Maxillary Sinusitis." His attitude toward these cases has changed during the past twenty years. He does an intranasal operation, removing the anterior one-third of the inferior turbinate, then making a large opening into the antrum in the inferior meatus. He removes the naso antral wall to the anterior angle and if possible turns in a mucoperiosteal flap from the nasoantral wall to the floor of the antrum. He does not believe in curetting the antrum, even tho polypi are present.

DISCUSSION

Dr. Nevin Pontius: I agree with Dr. Perry that, except in specific infections, it is not necessary to curette the antrum. I have been able to make a large permanent opening intranasally by using a trephine in the inferior meatus and enlarging this opening forward with the rasp to the anterior angle.

Dr. J. H. Harter: An operation to be a popular and standard one must not only give good results but must be simple enough so that it can be done by any surgeon of ordinary ability and training. The operation described by Dr. Perry is mechanically a most difficult one and I predict will never become popular. The same work can be done thru the canine fossa with much greater ease.

Dr. Frank Chase: We should be very careful in making a diagnosis of this condition. Some of the roentgenologists make a diagnosis from a plate, but such should not be accepted.

Dr. H. F. Macbeth: It is possible for an expert roentgenologist to demonstrate details in the pathology of the maxillary sinus. If the x-ray man says there is a polyp in the antrum I always operate and always find it. In some of these cases I dissect out the lining membrane and remove it. The operation is finished by making a large opening in the middle meatus.

SPOKANE COUNTY MEDICAL SOCIETY

Pres., C. M. Doland, M.D.; Sec, G. H. Anderson, M.D.

The regular meeting of Spokane County Medical Society was held Oct. 25, in St. Luke's Hospital, Spokane, Wash. This meeting was the first of the proposed monthly clinical meetings.

Dr. Bird presented a case of splenomyologenous leukemia which had shown definite improvement after the use of small doses of x-ray therapy. Dr. Gilpatrick discussed the case and gave a review of leukemia. Dr. Aspray spoke chiefly on the use of x-ray in its treatment.

Dr. Rose presented a case of blastomycosis which had been treated by the use of iodides, salvarsan and x-ray, with definite improvement. This was discussed by Dr. Anderson.

Dr. Stackhouse presented a case of hemangioma of the floor of the mouth and neck in an infant. This was discussed by Dr. Marshall, who emphasized the futility of surgical intervention in vascular tumors of this sort because of the difficulty in controlling hemorrhage.

Dr. Stier reported a case of pathologic fracture, due to carcinoma metastases into the humerus, secondary to carcinoma of the prostate. The lesion in the prostate was not recognizable clinically and was found at autopsy. He showed lantern slides demonstrating the numerous metastases thruout the bony skeleton. He also showed lantern slides of sections made of the primary growth in the prostate and of the metastatic growths. Dr. Langworthy discussed this case and gave a comprehensive review of bone conditions likely to give rise to pathologic fracture.

The application was read of Dr. Harry Stark Holmes, of Elk.

OREGON

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., Geo. Parrish, M. D., Sec'y., H. C. Bean, M. D.

A meeting of the society was held in Portland, Oct. 17 with about 100 members in attendance. The paper of the evening, by Dr. Ralph Matson, was on "Treatment of Pulmonary Tuberculosis by Pneumothorax." The paper was illustrated with slides. The controversy between Dr. George Parrish, city health officer, and Commissioner Mann was presented by Dr. E. W. Rockey. Discussion disclosed the unanimous opinion that the society should back Dr. Parrish in the stand which he had taken. The following resolution was unanimously adopted.

Whereas, reports have been published within the past few days indicating that internal dissention of a personal nature is made to affect the bureau of health; therefore,

Be it resolved, that the Portland City and County Medical Society signify their general approval of the work of Dr. George Parrish in that department, and disapprove of any interference that might imperil the efficiency of his office. We regard public health as a matter of safety rather than a utility, and recommend the restoration of the health bureau to the department of public safety, where it was formerly administered.

POLK-YAMHILL-MARION MEDICAL SOCIETY

Pres., F. H. Thompson, M. D.; Sec'y., C. W. Southworth. M. D.

The regular meeting of the Polk-Yamhill-Marion Society was held at Salem, Oct. 16.

The program consisted of the following papers: "Some Acute Deformities of the Legs and Feet," by Dr. C. R. McClure, Portland. "Plastic Reconstruction of the Deformities of the Nose," Dr. A. B. Bettman, Portland.

IDAHO

INLAND EMPIRE MEDICAL ASSOCIATION

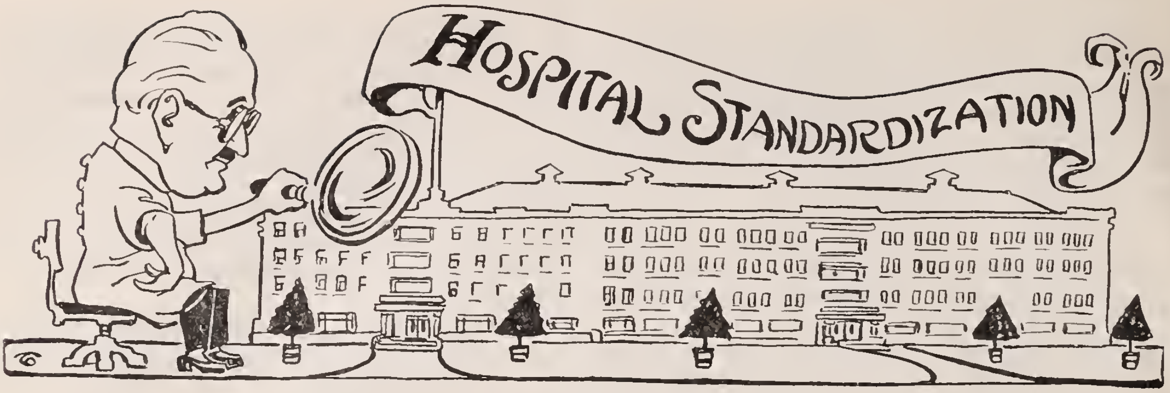
Pres., F. A. Bryant, M. D.; Sec'y., W. O. Clark, M. D.

This medical society combines the former Northern Idaho Medical Society and Whitman County Medical Society, of Washington, now designated as the Inland Empire Medical Society. Its meetings are held in the spring at Colfax, Wash., and in the fall at Lewiston, Idaho.

The fall meeting of the Association was held at Lewiston, Idaho, Oct. 24. The morning was devoted to clinics at the hospitals, followed by luncheon at the Elks Club. The following program of papers was presented at the afternoon session:

"Preliminary Treatment Preceding Prostatectomy," Dr. E. T. Ristine, Seattle; "'Some Disorders of the Hypophysis," Dr. G. C. Miller, Seattle; "Extra Uterine Processes," Dr. E. G. Braddock, Lewiston; "Urinary Functions in Children," Dr. F. C. Davidson, Seattle; "Syphilis in the New-born," Dr. L. B. Stockslager, Lewiston.

The following officers were elected for the ensuing year: President, Dr. F. A. Bryant, Colfax, Wash.; Vice-president, Dr. J. H. Einhouse, Moscow, Idaho; Secretary-Treasurer, Dr. W. O. Clark, Lewiston, Idaho.



Edited by GEORGE W. SWIFT, M. D.

THE VICTORIA MEETING OF THE AMERICAN COLLEGE OF SURGEONS

The sectional meeting of the Fellows of the American College of Surgeons of Washington and British Columbia was held in Victoria Sept. 28-29 at the Empress Hotel. The Fellows have held a meeting each year since 1919. In fact, it was the beginning of the movement of Hospital Standardization in the Northwest. It might be well to offer some criticism at this time of the meeting in Victoria, so that a lesson may be learned for future meetings.

From the standpoint of hospitality, surgical clinics and scientific program this meeting ranks as one of the best of the year. The social activities were confined entirely to luncheons, at which each man paid his own way, and shortly after the luncheon began a program was presented by the Eastern speakers. A great deal was accomplished at these luncheons, perhaps more than at the set afternoon programs. The evening program, to which the public was invited, was a great success from the standpoint of attendance on the part of the public. From this one can easily see that the meeting as a whole was entirely successful.

From the standpoint of the Fellows of the College and those members of the profession who are vitally interested in Hospital Standardization as submitted and supported by the College, it is only fair to say that in many ways the meeting was a great disappointment. To be sure the Eastern speakers promised a new presentation next year and it is to be hoped that there will be a marked change in the stereotyped expressions, to which we have become accustomed.

The striking features of the meeting from the standpoint of the profession were (1) the changed attitude toward fee splitting, (2) the changed attitude toward anesthetics, (3) the unchanged attitude toward public discussion of poor and unnecessary surgery. Briefly, two of the speakers from the East admitted the fact that the campaign against fee splitting, waged by the College, has brought forth a vast number of poorly equipped and unqualified surgeons from the ranks of the general practitioners. This is explained on economic grounds as well as professional ambition on the part of the general practitioner. This, of course, was predicated. No one ever seriously expected the general practitioner to take care of the family for all the little ailments and routine visits associated with the general practice of medicine, only to refer the $250 or $500 operative cases to some surgeon who had never seen the family and who was only brought in upon the recommendation of the general practitioner.

On the subject of anesthesia the College went on record as being willing to support a Department of Anasthesia under the direction of a medical man, but wherein nurses trained in this particular subject might be used as well as the physician who has become an expert in anesthesia. Of course this is nothing new for the Northwest. In Seattle the City Hospital was the first, the Virginia Mason the second and the Seattle General the third to establish a Department of Anesthesia. Hospitals in other cities have already adopted this plan. It is a healthy sign, however, when the College finally comes to adopt at least a workable plan for anesthetics. It is the first of the national organizations that has had the nerve to take even this step forward and perhaps now others will follow.

The third subject was in regard to public discussion of unnecessary operations and other matters purely professional but discussed before the public. In the presence of a number of Sisters, a large number of nurses, most of whom are just beginning their training, hospital superintendents, trustees and a sprinkling of laymen, it does seem as tho the spokesmen for the College would refrain from discussing these subjects. Nothing is to be gained. The statement that 300,000 unnecessary operations had been prevented by the campaign of the American College of Surgeons is open to severe criticism. How does anyone know whether they were unnecessary or not. One appendix removed by a mistaken diagnosis certainly does not counterbalance the appendix that is allowed to rupture and the patient die merely because it was impossible to make a positive diagnosis at that time, and yet those instances are on record where physicians have hesitated too long before opening the abdomen.

There is a field for the exploratory operation and every hospital staff should make an operation possible rather than prevent it. Is it not about time that we cease this public discussion and get down to some fundamental facts regarding these operations. At the scientific meeting following the statement regarding the number of operations prevented, an Eastern speaker demonstrated lantern slides, in which the x-ray did not show the typical pathologic picture but the operation revealed it to be there just the same. Of course this operation was in the hands of a skilled surgeon, but what is the man going to do in the small community who has no one to consult with and must open the abdomen to find out for himself just what the actual condition is.

In concluding, may we not ask these questions: Has not the crusade against fee splitting brought forth a much more vicious counter evil? Second, has not the crusade against unnecessary operations resulted in the development of too much caution and put too many safeguards around the average surgeon? Standardization to succeed must not only safeguard the patient but must also protect each member of the profession. Everyone admits that surgery should be done by a qualified surgeon, but there must be an endless chain in the development of surgeons. Some will come from the highly trained Eastern center, who have never had beneral practice. These will be limited and will not as a rule find an easy berth in our Western communities. The great majority will come from the ranks of the general practitioners. They will begin by assisting a surgeon and gradually work into minor surgery and then into major surgery. This is a law of development and it cannot be revoked. If Standardization is to succeed, it must recognize this law and make provision for it. The hospital staff must always bear this in mnd and so should the College of Surgeons.

A comment in passing on the meeting in Victoria was the absence of Fellows of the American College of Surgeons. The leaders in the profession and especially the younger men who should have been present and entered into the discussions were absent. Something is wrong with any organization that does not have 10 per cent of its members in attendance. In contrast to the absence of the Fellows of the College was the marked attendance and interest shown by the hospital superintendents and many of the trustees. While this is a small matter, does it not offer the thought that Standardization, like many other things started by the medical profession, is soon going to be taken over by laymen because of the lack of interest shown by the medical men in their own sphere of activity. If this is the result, the professon should not be provoked because lay ideals are forced upon the individual physician.

HOSPITAL RECORDS

The accompanying charts were furnished by the statistician in the laboratory at the Seattle General Hospital. All hospitals have more or less routine charts for their records; some are very simple, others rather complicated. These illustrations appear to be comparatively simple and yet are very complete and are, therefore, used to illustrate this article.

The time required for the "book work" at the Seattle General Hospital is about twenty minutes per day. Surely no laboratory can complain of that being too long to devote to statistics. The value can be seen at a glance. A study can be made of the blood work, any particular type of disease, sputum examinations, urinalyses, Wassermanns; in fact, anything pertaining to the laboratory work with accurate statistics on the same. The various cross indexes, as shown here, show how easy it is to secure these data when they are properly tabulated. The value from the standpoint of teaching for internes cannot be overestimated.

Hospital standardization has reached the point now where compulsory rules and regulations are practically unnecessary. The spirit of Standardization is developing along constructive lines; the surgeons are beginning to demand more help from the laboratories; the laboratories are beginning to demand a greater opportunity to develop their branch of surgical work. This is one of the most promising developments in Standardization. It means, further, that the surgeon who is in the process of development is learning to depend upon the laboratory department more than upon experiments with actual operative work. This is particularly true in diagnosis. This is another promising development. The internists, on the other hand, are beginning to make use of the laboratories and, as the medical director of one of our large laboratories remarked the other day, the greatest part of his work now comes from those who are confining themselves to internal medicine.

The uncertain period of Standardization has been passed and, as we move forward in this developmental period, the ideas of many men who have previously failed to lend their minds to this period of development are now being put forward. From the pediatricians come suggestions to the laboratory men, from the neurologists come suggestions to the internists and so on to form an interlacing of the whole fabric of medicine. Soon statistical studies will be in vogue. Reports from hospitals with a staff of 50 men, reporting a series of 500 goiter cases, 500 appendix cases or 5,000 tonsillectomies will be a common thing within the next few years in the hospitals of Seattle.

These results will be from the average surgeon, not from a group of specialists, as in some of the large Eastern clinics. It will show that the average man is supposed to accomplish under average circumstances. One hospital is now preparing a study of the treatment of diabetes in two hundred and fifty diabetics with some twenty-five men administering insulin. What a remarkable report this will be, every case a private patient, every doctor doing his best. one laboratory checking them all, one dietitian responsible for their diets, the final result representing the general average. This, of course, will be the culmination of Hospital Standardization.

Scheme for Laboratory Records of Laboratory, Seattle General Hospital

Aug. 1923 Blood Count

Line	Room	Date	Record Number	Tissue Number	Name	Doctor	Diagnosis	Leuc.	Polys.	Monos.	Eos.	Reds	Hbg.	C. Time	Wass.	React.	Sp. Gr.	Alb.	Sugar	Acetone	Epith.	Pus	R. B. C.	Casts	Crystals	Blood Urea	Creat.
1	308	7	12290	3700	Mrs. A. Anderson	Loe	Carcinoma Stomach	20,000	80	20		2,000,000	40	4	Neg.	Ac.	12	+	–	+						20 mg	2

Above is scheme of day book, names and their record numbers obtained each day from admittance cards for record of laboratory work for each patient, also for check up on laboratory work.

Dr. A. O. Loe 1923

Date	Name	Page	L	Name	Page	L	Name	P	L
8/7	Anderson	50	1						

Card index for above loose leaf book.

Malignancy Card 1923

Date	Tissue Number	Doctor	Source	Diagnosis
8/7	3700	Loe	Stomach	Adenocarcinoma

Malignancy and tuberculosis each has an additional card for looking up malignancy and tuberculosis data, also autopsies.

Stomach 1923

Date	Tissue Number	Diagnosis	Date	Tissue Number	Diagnosis
8/7	3700	Adenocar.			

Each organ removed has card, as stomach, appendix, uterus, etc.

Tissue Number 3700

Anderson, Mrs. A. 8/7/23. Dr. A. D. Loe

Tissue from Stomach. Diag. Adenocarc.
Gross Diag. Specimen shows etc.

Microscopic Exam:
SECTION I shows..........
SECTION II shows..........

Copy of Pathologic report card.

Date	Tissue Number	Name	Doctor	Clinical Diagnosis	Tissue Removed
8/7	3700	Mrs. A. Anderson	Loe	Carc. of Stomach	Tissue from Stomach.

Day Book for Pathologic Specimens. From this index patient can be located by date, name, doctor, diagnosis, record number or tissue number.

A record is also kept for statistical purposes under specimens examined as, for example, below is a copy of the outline for sputum and smears.

1923 Sputum

Date	Room	Name	Doctor	Source	Diph.	Staph.	Strep.	T. B.	Misc.
8/7	309	John Hogg	Smith	Coughed up Sputum.	+	+		+	
				Smears					
8/8	205	Jos. Smith	Allen	Throat	+		+		

PUBLIC HEALTH LEAGUES

WASHINGTON

SELF-HELP INDISPENSABLE

"Instead of running in tears to a harsh 'mama' to put a poultice on the tender spot every time we get an economic spanking from a wicked and unappreciative world," writes a contributor to the **American Physician**, "we imagine that the gentlemen in the Chicago office of the A. M. A. wish devoutly that there might be a little more initiative in the medical profession at large, more of a spirit of up-and-doing self-helpfulness." That the gentlemen "in the Chicago office" do appreciate and encourage any movement that aims to put on a more satisfactory basis the economic and legislative problems which beset the medical profession has been demonstrated by the recognition that they have given in their Journal columns to what the Washington physicians have done thru the Public Health Leagus. The history and result of our Referendum 13 fight were fully reported therein, and as a result of this publicity numerous inquiries were received at the League office from interested persons of other states. Even the League's annual meeting held in Spokane in September was given considerable space in the Journal.

Now comes the October A. M. A. Bulletin, which discusses questions of medical economics and organization and reaches about 60,000 of the country's most influential physicians, with a lengthy article on the "Public Health League of Washington." Realizing that the old policies must give way to the new, that in the legislatures of the different states bills are being annually introduced to place the "healers" on a par with the physicians, and that an active organization must be built up and maintained to meet the assaults of quackery on scientific medicine and its practitioners, the eyes of the physicians of the United States are turned to Washington, watching the unfolding of the League idea, and following its accomplishments in promoting the interests of the profession and the public, which needs the best that science can offer.

In economic matters we should not expect too much of the A. M. A. per se, for it exists only because of its constituent state and county societies. As we vainly look to Congress to do those things that are the province of our local municipalities, so we have looked to the A. M. A. to do those things that are purely local in character. This is wrong, but the

Portland Surgical Hospital

The Portland Surgical Hospital, 611 Lovejoy St.
Mrs. Tom Richardson, *Superintendent*

Portland Convalescent Hospital

The Portland Convalescent Hospital, 862 Marshall St.
Miss Elva Hill, *Superintendent*

The Portland Surgical and Convalescent Hospitals have been co-ordinated and modernly equipped for the practice of Surgery, Medicine and Radio-therapy.

CAPACITY—NINETY BEDS
Operated for the Clinic of

DRS. COFFEY, SEARS, JOHNSTON AND PAYNE

DOWN TOWN OFFICES:
11th Floor Stevens Building, Portland, Oregon

League is changing the order of things in this state and bringing the medical profession into a positive, instead of negative, relationship with political and economic questions that affect public health.

The League is now carrying on continuously the work formerly attempted by a committee of the state association which functioned for a few weeks only during the latter part of the biennial legislative session. As such, the League is as truly an integral part of the medical profession as are the state and county societies and, as every progressive physician should ally himself with his local society, so should he join the League. It deserves and has a right to expect his active support. If it is not all he thinks it should be, he can make it better. It cannot function to its fullest capacity without the material cooperation of all the profession and, as it is not to be expected that the state association can function as such without the support of the individual practitioner, neither can the Public Health League carry on the legislative, educational and health protective features unless it receives the 100 per cent membership for which it is laboring. Neither is it fair that the man, who is willing to give his time and money to carry on the League's activities, should bear the financial burden for an unreasonable percentage of the men who contribute nothing but criti- in the benefits accruing because of a more favor- cism or passive resistance. but who share as fully able attitude toward their profession by legislators, the press and the public at large.

BOOK REVIEWS

Edited by KENELM WINSLOW, M. D.

Diseases of the Nervous System. A Text-Book of Neurology and Psychiatry. By Smith Ely Jelliffe, M.D., formerly, Professor of Psychiatry, Fordham University, etc., and William A. White, M.D., Superintendent of St. Elizabeth's Hospital, Washington, D. C., etc. Fourth Edition 475 illustrations and 13 plates. 1119 pp. $9.50. Lea & Febiger, Philadelphia and New York, 1923.

The fourth edition of this well known book has been completely revised, many of the subjects having been rewritten and enlarged upon. The authors of endeavored to bring the volume up-to-date which is an enormous task, considering the rapid progress made in this branch of medicine. Practically 200 pages have been added since the first edition. The tables and charts are of invaluable service. The entire subject is handled in a scientific manner and not padded with obsolete theories. The subject of neuropsychiatry is becoming more and more recognized as to its importance in general medicine and this up-to-date volume will be of great value to those who will use it.

Wilt.

Elements of Scientific Psychology. By Knight Dunlop. Professor of Experimental Psychology in the Johns Hopkins University, etc. 368 pp. with 33 illustrations. $3.50. C. V. Mosby Co., St. Louis, 1922.

This book is intended primarily to introduce the college student to the elements of psychology. Being a scientific psychology it necessarily departs from the old timeworn formulae and methods and, instead of dealing with psychologic problems from introspective points of view, deals with real objects and real activities with scientific methods. The terminology differs from the old psychology from necessity. The author has presented his subject in a clear, simple and concise manner, and it forms an excellent groundwork for the special branches of psychology. It will not only serve the purpose as a text-book for the student but also will give the general practitioner a clear insight to the psychology which is rapidly building itself into the art of medicine.

Wilt.

The Medical Department in the U. S. Army in the World War. Vol. I. Prepared under direction of Maj. Gen. M. W. Ireland, M. D., Surgeon General of the Army. 1389 pp. Government Printing Office, Washington, D. C., 1923.

The Surgeon General states that the purpose of this history is not only to provide a permanent written record of the accomplishments of the medical department in the war, but also as a contribution to medical science. In order to give the proper back ground for the performances of this department, there is first a review of its status when the war began. There is an outline of the evolution of the medical department, including the dental division, with a description of the personnel of each. There are chapters on the veterinary division, medical officers training camps, department of sanitation, hospitals, internal medicine, psychology and other branches in which the medical man performed notable service during the progress of the war. A list is given of the medical officers killed in action, died of wounds, disease and accident. More than half of the volume is devoted to the war department promulgations. If one has leisure and sufficient interest in the matter he will find much entertainment in this volume.

The Surgical Clinics of North America. (Issued serially, one number every othe rmonth.) Volume III Number 5 (Minneapolis - St. Paul Number—October. 1923), 300 pages with 200 illustrations. Per Clinic year (February, 1923 to December. 1923). Paper $12.00; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

This is a very instructive issue of this publication. The opening paper by Farr contains some helpful surgical adjuncts and methods, describing the shoe hook adhesive dressing, automatic wire spring detractor, a wound contractor, air dilatation of bladder in suprapubic cystotomy, and other equally useful and handy suggestions. Leading surgeons of the twin cities present clinical reports of a variety of interesting conditions, several dealing with the disorders of the esophagus, the kidney, uterus, gallbladder and pancreas. Others treat diseased conditions of the knee joint, patella, shoulder and spine, and several others deal with different phases of fractures. The volume is replete with much useful information and many timely suggestions.

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MALIGNANT DISEASES OF THE COLON *

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Malignant disease of the colon must be constantly kept in mind while treating any intestinal disturbance because its onset, symptoms and physical signs are frequently so marked that mistaken diagnosis can easily occur. Sarcomata and especially lymphosarcomata are more prevalent in the small intestine than in the colon. However, if they are located in the colon, the rectum and ileocecal regions are most frequently involved. Sarcomata of the colon are usually of the small round celled variety; occasionally a spindle cell sarcoma is found and a few melanosarcomata have been reported.

Sararcomata or lymphosarcomata may involve the intestine by contiguity from some neighboring organ. A primary lymphosarcoma of the mesenteric or retroperitoneal glands may extend until it involves the intestine, but secondary lymphosarcomata of the intestines are rarely found. A primary sarcoma of the intestine very often produces secondary metastases in other organs. However, metastases of lymphosarcomata of the intestine usually occur in the regional lymph glands. Sarcomata occur most frequently in young adults from twenty to forty years of age. However, it is frequently found in very young children and occasionally in old people.

The general symptoms, such as anemia, asthenia, loss of weight, etc., are usually very marked. Diarrhea is present more often than constipation. Pain unfortunately is a late symptom and the patient frequently does not consult a doctor until all hopes for a cure is passed. The tumors may become very large but do not produce obstruction as frequently as in carcinoma. Hemorrhage is more common in sarcomata on account of their vascularity and may be the first symptom to give a clue as to the diagnosis. The early diagnosis of sarcoma of the intestine is frequently difficult and is often not possible until an exploratory incision is made or it is accidently discovered during an operation for some other lesion.

Sarcomata are less favorable for a permanent cure than carcinomata on account of their rapid growth and early metastasis. The average case of intestinal sarcoma dies within nine months. An interesting case of mine demonstrating the above was a Greek boy, 17 years of age, who came in complaining of weakness, loss of weight, diarrhea and pain. On examination a large tumor mass was palpated in the rectum. He was so exhausted that nothing could be done and he died three days after his admission to the hospital, which was six months from the onset of his first symptoms. At autopsy we found a small round celled sarcoma of the rectum with metastases in the liver, kidneys and spleen.

Carcinomata, unlike sarcomata, are more frequent in the colon than in the small intestine. They

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* Read before the Second Annual Meeting of Pacific Northwest Medical Association, Seattle, Wash., June 19-21, 1923.

are usually less rapid in their growth and on account of their late metastases offer more hope for a permanent cure. It is occasionally impossible to clinically differentiate sarcomata from carcinomata and hence the diagnosis is frequently made by a microsopic section.

The lymphatics of the colon in general follow the course of the larger blood vessels and it is fortunate that their involvement in carcinoma of the colon is late. The glands are frequently enlarged from secondary infection even before they are invaded by metastases and hence it is impossible to say that metastases are present by merely palpating an enlarged gland. It is frequently necessary to section a gland before secondary metastases in them can be diagnosed. Metastases of lymph nodes are more commonly found at autopsies than at operations. When metastases do occur, they are mostly found in the lymph nodes, liver, omentum, peritoneum, lungs and brain. They usually produce their original structure. Secondary growths occur by way of the lymphatics, by continguity of neighboring organs and occasionally by carcinomatous emboli.

The classification of the colon varies in different text-books but not sufficiently to confuse the reader. Ewing's classification of carcinomata of the intestines is as follows:

1. Adenoma destruens, forming a broad superficial ulcerating tumor with obstruction.
2. Stenosing fibrocarcinoma.
3. Gelatinous adenocarcinoma.
4. Bulky polypoid or papillary carcinoma derived from polyps.
5. Multiple carcinoma following polyposis.
6. Acanthoma.
7. Melanoma.

The frequency being in the order named.

The adenoma destruens is the most typical form of malignant adenoma. In the cecum it is bulky and frequently ulcerates. However, it is less obstructive here than in the rectum, where early ulceration and obstruction occur.

Stenosing fibrocarcinoma produces at first a superficial ulcer with pronounced induration due to fibrosis. It tends to encircle the bowel and produce annular strictures. The tumor infiltrates neighboring tissues and nodes early and offers an unfavorable prognosis, unless excision occurs before the intestine becomes fixed.

Gelatinous adenocarcinoma, as its name implies, is a large gelatinous mass which ulcerates early and makes the bowel a thick rigid tube. Extension to the peritoneum is common, but lymphatic invasion is not.

Carcinoma, developing from solitary polyps, is mostly found in the rectum. Multiple carcinomata, following poylposis, occur most frequently in the rectum and colon, tho the ileum and jejunun are also occasionally involved.

The acanthomata are squamous celled carcinomata, arising chiefly from the anal epidermis. The lymphatics in this location pass around the perineum and thighs, reaching the inguinal glands in Scarpa's triangle.

Melanomata are rare and different authors disagree as to their origin and structure.

Primary carcinomata of the intestine frequently produce secondary metastases, but primary carcinomata elsewhere rarely produce secondary growths in the intestines unless it is by contiguity.

Carcinomata of the colon, the same as cancer in general, seem to be on the increase. The increase is partly explained by our better diagnostic facilities, tho this alone cannot account for the constantly increasing mortality of this dreadful affliction. Vital statistics and education of the public are undoubtedly great aids in combatting this ever increasing catastrophy.

The following chart, from Vienna General Hospital, will give an idea of the location and comparative frequency of cancer of the intestines as compared to carcinoma elsewhere.

A series of cases at the London Hospital, collected and reported by Mummery, show that among 191 cases of cancer of the large intestine, exclusive of the rectum, 103 were found in the sigmoid flexure, 44 in the cecum, six in the ascending colon, 12 in the splenic flexure, 17 in the transverse colon, six in the descending colon and three in the hepatic flexure.

Of a series of 129 operative cases, reported by Erdmann and Carter, 50 were found in the recto-sigmoid region, rectum and anus, 37 in the sigmoid proper, 9 in the terminal transverse colon, splenic flexure and descending colon, 15 in the proximal transverse colon, hepatic flexures, and ascending colon, and 18 in the terminal ileum and cecum and one-half of ascending colon.

The foregoing chart and other statistics easily demonstrate that carcinomata of the recum and sigmoid flexure are by far the most prevalent. This is fortunate because they are demonstrable in many cases by routine rectoscopic examinations.

The etiology of cancer is an interesting problem

Autopsies at Vienna General Hospital

From 1870 - 1881
MAYDL
20,480 Autopsies

	Cases	
Carcinoma of Intestines	100	
Rectum	48	94
Large Intestine	46	
Small Intestine	6	
Duodenum	2	
Ileum	4	
Jejunum	0	
Appendix	1	
Cecum	9	
Ascending Colon	6	
Colon in General	17	
Sigmoid Flexure	13	
Rectum	48	
TOTAL	100	

From 1882 - 1893
NOTHNAGEL
21,358 Autopsies

	Cases	
Carcinoma of Intestines	243	
Rectum	114	232
Large Intestine	118	
Small Intestine	11	
Duodenum	5	
Ileum	6	
Jejunum	0	
Appendix	1	
Cecum	14	
Ascending Colon	–	
Colon in General	63	
Sigmoid Flexure	40	
Rectum	114	
TOTAL	243	

and, altho many experimenters are constantly striving to solve its mystery, no definite etiologic factor has been discovered. Long continued irritation is at present the only etiologic factor that seems at all plausible and yet this alone cannot be the sole cause of all cancers. Carcinomata rarely develop in chronic ulcerative proctitis and colitis, even tho great irritation is constantly present.

Kraske claims that, altho carcinomata frequently develop in patients with hemorrhoids, there is no satisfactory evidence at present to show that malignancy develops in the tissues altered by hemorrhoids, fistulae or cicatrices. Pennington and others disagree with this statement and report cases occurring in rectal scars. The slow development of rectal cancers, extending over a period of two or three years, suggests that the early symptoms may be due to the cancer rather than from the hemorrhoids. Some authors claim that the favorite sites for the location of carcinomata in the colon are the places which are subject to constant irritation of hard scybalous masses. However, this is merely an assumption and not a proven fact.

There is a diversity of opinion as to the importance of heredity in carcinoma, yet clinically it cannot be disregarded for it occurs too often to say that it is mere coincidence.

Carcinoma of the colon is chiefly a disease of mature adults past forty years of age, yet of all cancers found in young adults, the colon is more frequently involved than any other part of the body.

The symptoms of carcinoma of the colon vary according to the size, character and location of the tumor. Unfortunately carcinomata of the colon have an insidious onset and pain is frequently a late symptom so that the patient often does not consult a doctor until the disease is well advanced.

The characteristic symptoms given by most books are loss of weight, anemia, asthenia, diarrhea, constipation, obstipation, hemorrhage, pain, tympanites, etc.

In my opinion it is best to divide the symptoms of carcinoma of the colon into five groups, as follows:

1. Symptoms due to secondary colitis.
2. Symptoms due to the tumor itself.
3. General symptoms common to all malignancies.
4. Symptoms due to extension to the peritoneum and lymphatics.
5. Symptoms due to complications.

1. Symptoms due to the secondary colitis are similar to any which are usually present in fermentative, mucous or catarrhal colitis, namely, diarrhea, constipation, passage of a soft foul smelling fermentative stool with variable amounts of mucus, bloating, passage of a large amount of flatus, colicky pain, abdominal distress, alternating diarrhea and constipation, etc.

2. Symptoms due to the tumor itsef. Pain from the tumor itself is rare unless it is situated very near the anal orifice because the bowel itself is not sentive, hence pain is often a late symptom.

Hemorrhage occurs in at least 25 per cent of cases and may be profuse or very slight. The bleeding is often not distressing and hence hemorrhoids or the like are diagnosed.

Obstruction may be partial or complete, depending on the size and location of the tumor. It is more often found in the distal than in the proximal colon. Sudden constipation in an adult past forty is a very suspicious symptoms, especially if combined with other symptoms present in carcinomata. With obstruction the size and character of the stool will vary according to the type and amount of the obstruction present. The long and short ribbon stools are found in the long scirrhus and gelatinous carcinomata. The round balls are found in the tumors associated with a spastic colon. A foul soft stool with mucus, pus and blood is found most often with a degenerating adenocarcinoma.

Moisture of external anal region is due to secretion of mucus, blood and pus from the tumor. This in turn will occasionally produce a pruritis.

3. General symptoms are those common to any carcinoma, namely loss of weight, anemia, cachexia, asthenia, debility, anorexia, etc.

4. Symptoms due to extension to the peritoneum and the lymphatics. Peritonitis may be localized or general. Localized peritonitis, due to extension of the carcinoma, is often the cause of the pain present, the pain frequently being caused by pressure on nerve trunks or peritoneal irritation. Peritonitis may in turn be due to small hemorrhages present. General peritonitis is usually due to perforation and is similar to any general peritonitis. The symptoms due to lymphatic involvement are chiefly two groups. (a) Local involvement of regional lymph glands, obstructing the return circulation, such as swelling of one leg due to pressure from the inguinal glands, pressure on nerves producing pain, pressure on ureter causing obstruction to urinary flow, etc. (b) Portal obstruction with swelling of the abdomen, ascites, edema, etc.

5. Symptoms due to complications, such as perforation into the bladder, with dysuria, polyuria, and feces in urine; perforation into the stomach, vomiting of feces, diarrhea and loss of weight. The symptoms from perforation will vary according to the location and extent of the perforation. Secondary infections may occur from the sloughing tumor mass and will present the characteristic symptoms, chills, fever, malaise and leukocytosis. The symptoms from metatases will vary according to the organ involved.

It is often of great aid in diagnosing malignancy of the colon to consider its symptoms and physical findings in reference to the location of the tumor. We can conveniently divide the colon as follows: (1) The appendix, cecum and ascending colon. (2) The transverse colon with its flexures. (3) The descending colon, sigmoid and rectum.

1. The appendix, cecum and ascending colon (*latency, tumor* and symptoms *late, obstruction* rare). Carcinomata of the appendix are rarely diagnosed except at operation and there are no definite diagnostic points of value to suspicion its presence. The symtoms of an appendicitis in a patient past forty with weight loss and anemia warrant surgical exploration. Oftentimes no suspicion of a malignancy of an appendix is present until all symptoms of a perforated appendix are at hand.

Malignancy of the cecum is often latent and no signs or symptoms are present which will allow us to make a diagnosis. I have found that most patients complain of a sense of discomfort in the lower right quadrant with no actual pain or obstruction. Obstruction is rare in the cecum or ascending colon, because the bowel contents in this locality are fluid and not formed as they are in the lower bowel. They all complain of a jarring in the cecal region, especially on stepping off or on a street car or any high step. Riding over rough roads will likewise jar them. Anemia was an early sign in most cases that I have seen. Weight loss was not a prominent symptom. Weakness can either be an early or late manifestation. The tumor mass was variable; in some it was marked and others just a vague resistance. The size of the tumor felt thru the abdomen bears no relation to the size of the tumor at operation. An indefinite resistance may prove to be an inoperable tumor. The blood picture of a pernicious anemia may be present and it is so diagnosed until a mass can be felt, or the x-ray shows a filling defect. They usually show some signs of a colitis, such as bloating, passage of flatus, etc.

Malignancy of the ascending colon cannot be separated from the cecum and must be considered with it. The symptoms and physical findings are the same except that a larger and more movable tumor mass may be present.

2. The transverse colon with its flexures (*latency, tumor* and *masked* symptoms). A carcinoma in the flexures is hard to diagnose because it is difficult to palpate a mass in either flexure and especially in the hepatic flexure. The x-ray in my opinion is our greatest aid in diagnosing tumors in

this location. Tumors of the transverse colon are likewise latent, yet they are more frequently diagnosed preoperatively than tumors in the flexures. A mass can be more readily palpated in this locality and occasionally some signs of obstruction are present. If perforation into another viscus occurs, the diagnosis is too late to be of value to the patient, yet it gives definite signs as stated earlier in the paper. The x-ray is of great value in diagnosing tumors in this locality.

3. Descending colon, sigmoid and rectum (*latency, tumor, more marked* symptoms and *physical* findings). Tumors of the descending colon are often mistaken for renal tumors and a cystoscopic examination with pyelography is often needed to differentiate them. A barium enema is also of great value. The symptoms in this locality become more marked because partial or more complete obstructions occur. The adenocarcinomas tend to obstruct the lumen, while the scirrhus types form an annular stricture. The closer the tumors are to the sigmoid the more frequent are the definite obstructions. A fecal impaction may be mistaken for a tumor mass in this locality. Fecal accumulations are also common above malignant strictures and on account of the soft compressible consistency of the mass, they are diagnosed fecal impactions before malignancy is suspected. In addition to the tumor and obstruction the general signs of carinoma are likewise present.

The tumors of the rectum are more frequently overlooked by barium enemas than in higher locations. All tumors within reach of the palpating finger or visible with a rectoscope are more easily diagnosed. If routine rectal examinations were made in both men and women, less hemorrhoids would be diagnosed. Routine recto- and sigmoidoscopic examinations should be made in all cases of colitis and especially if the patient is past forty. No rectal hemorrhage or bleeding should be prescribed for without a careful rectal examination. All cases with a severe anemia should have a careful rectal examination. Sciatica and backache are frequent symptoms of malignancy is this locality and should not be prescribed for until the patient is carefully examined.

It is impossible in this short resume to give all the symptoms and signs of malignancy in this locality but I might state that, of all the errors made, the errors of omission are greater than the errors of commission.

The differential diagnosis of malignancy of the colon is often impossible and all means at our command must be used in attempting to make a proper diagnosis. A careful history is of great importance and cannot be emphasized too strongly. A careful physical examination should be made and a routine prostoscopic and digital examination is essential. The x-ray is often the only means of arriving at a proper diagnosis and should be used as routine whenever possible. The x-ray should not only include a barium meal but an opaque enema is likewise essential. When signs of stricture are present, a word of caution should be sounded because, unless you immediately empty the barium from the colon, the patient will have a very hard time in getting rid of it and serious complications may arise.

The laboratory stool examinations are of value but less so than argued by some men. Absence of occult blood does not rule out malignancy and likewise a postive gram stain does not spell malignancy. If tumor tissue is passed, it is of decided aid and naturally would substantiate a diagnosis. However, this is usually a late manifestation, hence of little value. Examination for actinomyces should be made in doubtful cases. A routine Wasserman is ideal and, since our state laboratories do them free of charge for all reputable practioners, no excuse is plausible for not having it done.

It is well to divide the differential diagnosis of malignant disease of the colon into (1) *diseases* simulating malignant disease of the colon, (2) *tumors* simulating malignant disease of the colon, and (3) *general differential* considerations.

1. Diseases simulating malignant disease of the colon:

(*a*) Colitis need only be mentioned because it has previously been dealt with in this paper.

(*b*) Pernicious anemia. Malignant disease of the colon can present a blood picture similar to pernicious anemia and, if kept in mind, as a rule offers no difficulty.

(*c*) Prostatitis may simulate rectal carcinoma but careful examination offers very little difficulty.

(*d*) Lumbago and sciatica. All cases of lumbago and sciatica should be carefully worked out for an etiologic factor and then no difficulty will arise. Promiscuous prescribing offers many pitfalls.

2. Tumors simulating malignant disease.

(*a*) Benign tumors of the colon. The history and examination often will be sufficient to differentiate malignancy from benignancy. Occasionally a microsocopic diagnosis is needed.

(*b*) Hemorrhoids. Careful examination will

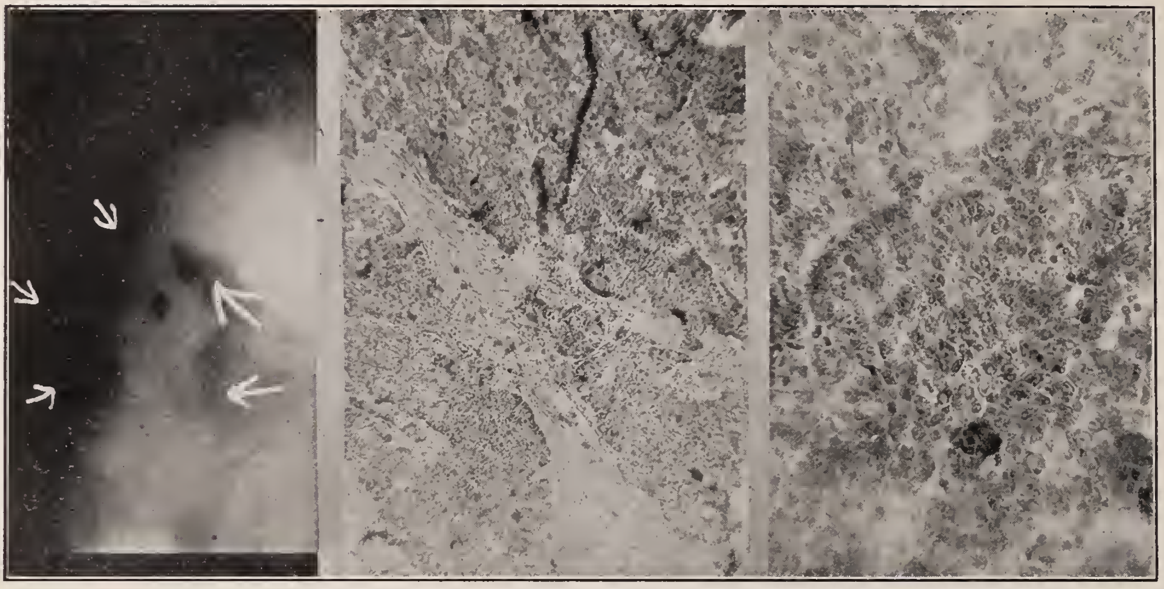

Fig. 1 Fig. 2. Fig. 3

Fig. 1. Case 1. Radiograph of carcinoma of cecum and ascending colon. Fig. 2. Microphotograph of tumor. Low magnification. Fig. 3. Same. High magnification.

usually suffice in these cases. If need be, a section can be made. I do not favor removing small pieces for a section because it often causes a rapid spread of the tumor.

(*c*) Actinomycosis may cause a tumor in the colon. However, a careful history will be of great assistance. If actinomyces are found in the stool the diagnosis is made. Occasionally a section is needed. Weight loss and anemia may accompany actinomycosis.

(*d*) Tuberculosis of the bowels is often hard to differentiate, but it attacks the young more often than cancer. A careful history and chest examination may cinch the diagnosis. Tubercle bacilli in the stool are of no value in my opinion. Tuberculin reactions are likewise of no value. Carcinomata may run a course of fever which makes the diagnosis even more difficult.

(e) Lues of the colon is differentiated the same as lues elsewhere, namely by the history, physical examination and the Wassermann reaction.

(f) Fecal impaction usually offers no difficulty if the same is kept in mind. Free catharsis usually eliminates the difficulty, tho one must remember both may be present as stated earlier in the paper.

(g) Renal tumors can be differentiated by pyelographic and cystoscopic examinations.

(h) Inflammatory masses such as diverticultis often cause considerable difficulty because diverticulitis is very common in individuals past forty. Recurrent attacks of colic, fever and leukocytosis favor diverticulitis. A laporatomy is occasionally needed as a final diagnostic procedure.

3. General measures such as specific laboratory tests do not exist in cancer. W. H. Chambers, in the February *Journal of Biochemistry,* reports some interesting observations on the alkalinity of the blood in cancer. Cancer cases have a pH of 7.5 at 20° C. Normal subjects have a pH of 7.31. This shows an increased alkalinity of the blood in cancer cases, tho it is not as yet of sufficient value to offer it as practical diagnostic procedure.

Blood sugar curves are of value but the same holds true as stated above for alkalinity of the blood. A great deal of experimental work is constantly being carried on and the future may bring forth aids that at present are lacking.

There are a few cases I wish to report which might emphasize the difficulties encountered in making a diagnosis of malignant disease of the colon.

Case 1. Mr. G., age 54, Oct. 11, 1922.

Complaints. Distress in abdomen, especially left flank. Weakness and backache.

Family history. Negative.

Past history. Negative.

Present Illness. Early in June had an attack of appendicitis followed by rapid recovery. Later in June attack of pain in right upper quadrant resembling gallbladder colic, followed by rapid recovery. Since then indefinite distress over abdomen, especially the left flank, for which he consulted us. The distress bore no relation to time of eating or character of food, no comiting, belching, moderate amount of bloating and atus. Mildly constipated. Did not notice any special change in character of stool. Relief of distress by catharsis or passage of flatus. No definite weight loss. Patient nervous and inclined to worry.

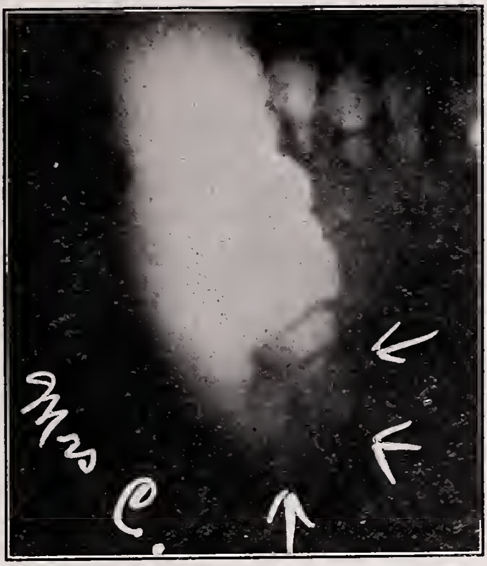

Fig. 4. Case 2. Note filling defect at base of colon.

Examination. Head, neck and chest negative. Abdomen: tender over entire colon, no masses demonstrable. Rectal examination: digital negative, rectoscopic examination negative. X-ray examination: chest negative. Esophagus negative. Stomach fills well, empty in five hours, negative. Pylorus and duodenum negative, small bowel negative. Twenty-four hours, colon well filled and negative. No pathology found.

Laboratory findings. Urine, negative. Stool: Carthartic stool, liquid, mucus two plus, fermentation one plus, negative for ova, etc. Occult blood negative. Stomach analysis: Free hydrochloric acid 26, total acidity 48. Blood count: hemoglobin (Dare) 78 per cent, red cells 4,540,000, white cells 4,400 differential normal. Wassermann negative.

Diagnosis. Chronic catarrhal colitis.

Patient returned home and under diet, etc, gained fifteen pounds in weight and felt well for about seven weeks, when he had an attack of influenza. He then started to complain of pain in his **right** lower quadrant, which was more or less continuous. He returned for examination Jan. 10, 1923, with pain in his **right** lower quadrant, weight loss and weakness. Examination now reveals a mass in the right renal region. Freely movable and only slightly tender. Marked anemia present and patient looks badly.

Laboratory findings. Hemoglobin (Dare) 46 per cent, red cells 2,860,000, white cells 4,200 dicerential normal. No nucleated red cells, poikilocytosis one plus otherwise negative. Stool examination: Occult blood three plus. X-ray examination: Kidney, ureter and bladder area negative. Colon enema shows large irregular filling defect in ascending colon. Looks like new growth; obstruction not complete.

Diagnosis. Carcinoma of cecum and ascending colon. This was confirmed at operation (figs. 1, 2, 3).

This patient undoubtedly must have had a carcinoma when first examined, but after careful examination nothing was found. He was a very marked neurotic and very fretful, so a routine barium enema was omitted. I feel that, had we not omitted this routine procedure, we might have not overlooked the malignancy and yet with so few physical and laboratory findings one would rarely suspect malignancy. This one of the types with masked symptoms which at times makes the diagnosis of carcinoma of the colon so difficult.

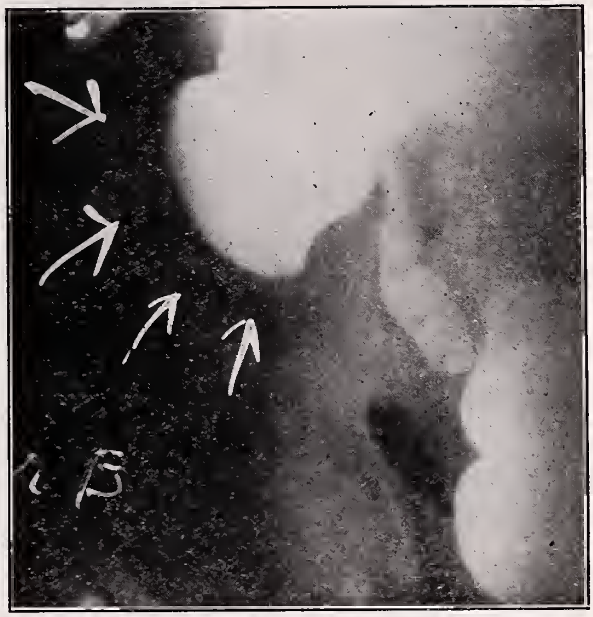

Fig. 5. Case 3. Note irregular filling of cecum.

Case 2. Mrs. C., age 60.

Complaint. Diarrhea and anemia. This patient was examined by several men and treated as a pernicious anemia for one and one-half years. She had no weight loss and had the characteristic appearance of a pernicious anemia.

Examined by us April 14, 1920. Small mass palpated in right lower quadrant, not movable, slightly tender.

Laboratory findings. Blood count: Anemia, secondary type. Index minus one, no nucleated reds, no leukopenia, etc. Stomach analysis: Free hydrochloric acid 0, total acidity 10. Stool analysis: Occult blood one plus. Wassermann negative. X-ray: Chest negative, esophagus negative, stomach negative, duodenum negative, small intestine negative, twenty-four hours; irregular filling defect in base of cecum, tumor mass. Forty-eight hours: filling defect still apparent. The diagnosis of carcinoma of the cecum was made and confirmed by operation (fig. 4).

Case 3. Mr. B., age 62.

Complaint. Slight discomfort in right lower quadrant. This patient had no weight loss, no marked anemia and felt fairly well except for a small amount of discomfort in the region of the appendix. Stepping off a curb or automobile especially jars.

Physical examination. Reveals a fairly fat abdomen, an indefinite small mass or resistance felt in right lower quadrant. It was tender. Free catharsis given and resistance still present.

Laboratory findings. Blood count: Hemoglobin (Dare) 80 per cent, red cells 4,320,000, white cells 7,299 differential normal. No abnormal cells. Urinalysis negative. Stool analysis: Normal formed stool, otherwise negative. Occult blood negative. Stomach analysis: Free hydrochloric acid 20, total acidity 30. Wassermann negative. X-ray: Chest negative, esophagus negative, stomach fills well and negative, pylorus and duodenum negative, small intestine negative. Twenty-four hours: Cecum, small irregular area at base and does not fill well under fluoroscope. Forty-eight hours same. Barium

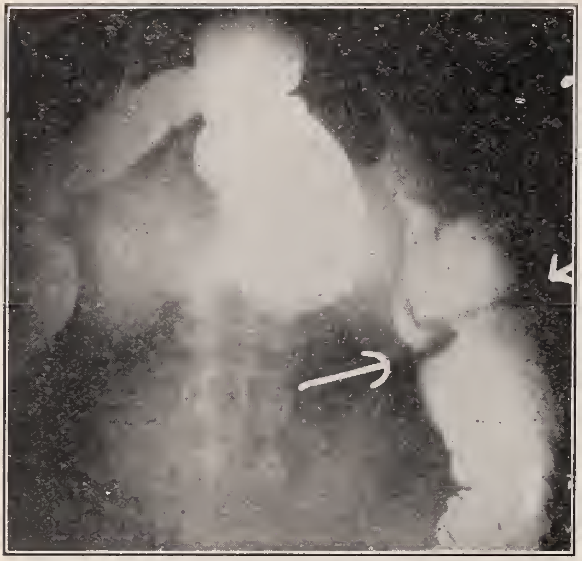

Fig 6. Case 4. Note constriction about cecum.

enema fills cecum irregularly. Colon plate shows cecum well filled. One week later x-ray repeated, same result.

Diagnosis: Suspicious of malignancy on account of age and resistance felt in right lower quadrant, also x-ray findings.

Operation: Inoperable carcinoma. Metasis in regional glands (fig. 5.)

Case 4. Mr. S., age 55.

Complaint: Stomach trouble. Patient gives characteristic history of a colitis with bloating, flatus, fermentative stool, etc. No weight loss, weakness or asthenia.

Examination: A fat abdomen, negative except for tenderness over colon especially in the right lower quadrant.

Laboratory findings: Blood count negative. Urinalysis negative. Stool analysis: Large amount of fermentation. Characteristic microscopic findings. Occult blood negative. Stomach analysis: Free hydrochloric acid 20, total acidity 40. X-ray: Negative except colon. Constriction about cecum, which fills poorly; appendix fills poorly.

Diagnosis. Chronic appendix. On account of age advised immediate operation.

Operation. Chronic appendix with adhesive band around cecum (fig. 6.)

The treatment of malignant disease of the colon is surgical and not within the scope of this paper. Radium as a palliative measure may alleviate some suffering in suitable cases. However, it is palliative and should be used with caution because it may arrest the disease for a short time and then it will break out with greater force than before.

The x-ray as a preoperative procedure is recommended by some, but most surgeons agree it had best be used postoperative. The x-ray increases the anemia and seems to weaken most patients and for that reason should be used with caution. Cancer of the rectum and colon are not as favorable for x-ray treatment as carcinomata in other parts of the body.

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MALIGNANT DISEASE AND ITS TREATMENT BY THE X-RAYS, RADIUM AND ELECTROCOAGULATION *

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Malignant disease shows such a high death rate, leads to so much pain and distress on the part of the victims, and so much depression on the part of the friends and relatives that it should command our first attention, and demand our united efforts toward its prevention and control. It is estimated that from 90,000 to 100,000 people in the United States die from cancer each year. That means that during the next ten years, unless we can modify this death rate, 1,000,000 people will die of cancer. I believe that, if all the knowledge that is now available concerning cancer be put into practical use, we can reduce this abnormal death rate fifty per cent. Surely that is worth while.

To accomplish this result it is necessary for each physician in this country to recognize early cancer, or better to recognize the precancerous lesion, or the pathologic condition that leads to cancer, and to treat it or have it treated thoroly and skillfully. It is often impossible for the most expert to say that the lesion in a particular case is or is not malignant, but the more experienced physician is more likely to be accurate in this diagnosis. Therefore, those who have had opportunities of a larger experience should be conferred with when possible. When all reasonable efforts at diagnosis have been exhausted and the diagnosis is still doubtful, it is surely better to treat it as malignant in the early cancerous or precancerous state than to allow the disease to continue until it becomes positively cancer, and perhaps in an advanced and incurable stage. This delay, until an undoubted diagnosis can be made or until classical symptoms appear, is responsible for many deaths.

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* Read before the Thirty-fourth annual meeting of Washington State Medical Association, Spokane, Wash., Sept. 20-22, 1923.

In addition to the necessity for physicians to be alert in the recognition of early cancer, it is equally important that we teach our patients and the members of the families the importance of consulting their physician when abnormal conditions develop. The association for the control of cancer has done much in this direction, but the individual instruction of the family physician in his daily work will accomplish much more.

Delays in the treatment of cancer, probably more than anything else, are due to the fact that the public has been led to believe that the only method of treatment is a surgical operation. This fear of the knife leads many patients to conceal their condition from both their family and from their physician. Let us teach them that there are other methods of treatment which in many cases are even preferable. Then, too, we must let the people know that there is a hope of cure in the great majority of cases if treated early. The best method of attack should be adapted to the conditions found in the individual patient. An ideal arrangement would be a consultation with the family physician, the surgeon and the radiologist.

CANCER OF THE SKIN

All warts, moles, crusts, which persist or recur, and fissures should be removed. For this purpose I am sure nothing equals the destruction by electrocoagulation, by means of the high frequency currents. The removal of these lesions will prevent the development of a certain number of cancers. All lesions must be destroyed thoroly. This is especially true of moles. So far I have not had any moles develop into cancer after electrocoagulation, and I have destroyed thousands. I have seen a number of patients who have died following the surgical excision of pigmented moles, and I believe excision of a pigmented mole is inadvisable. The cosmetic result is better and the cure I believe is more certain, if treated by electrocoagulation. In the treatment of all these precancerous lesions we expect 100 per cent to get well.

Basal Cell Epithelioma I believe is best destroyed by electrocoagulation, and this followed by the application of the roentgen rays, or radium to the extent of an erythema dose. In more or less advanced cases, additional radiation is advisable. The entire diseased area should be destroyed and curretted away. If bleeding granulations remain, the lesion has not been completely destroyed. By the above combination, if these epitheliomata are treated before they have extended to the deeper tissues, cartilage, or mucous membrane, all should be expected to get well. One hundred per cent is a large claim, but at present no patient should die of this disease, and we should no longer see these horrible deformities about the face which result from advanced rodent ulcer. To cure all demands early, thoro and skillful treatment.

Basal cell epitheliomata involving the eyelids are best treated by radium, because of the success obtained, and because of the conservation of tissue. In the treatment of basal cell epithelioma even with the roentgen rays alone, in a general clinic where all cases were treated, McKee obtained 90 per cent clinical cures, with 15 per cent relapses. Most of the recurrences, however, responded to further treatment, so that the original percentage of 90 is not materially reduced. (McKee: X-rays and Radium Treatment of Diseases of the Skin Lea & Febiger. New York. 1921.)

Squamous Cell Epithelioma of the Skin in my experience involves especially the temporal region, neck, and the backs of the hands. In all of these cases most thoro treatment should be instituted from the beginning and the adjacent lymphatic glands should be treated thoroly by the gamma rays of radium, or by deep roentgen rays. If treated early, practically all of these cases should get well. I am thoroly convinced that the local destruction of these squamous cell carcinomata by electrocoagulation is the best treatment. One must alwavs carry the destruction beyond the actual visible or palpable disease.

Epithelioma of the Lip. I am convinced that the treatment of primary epithelioma of the lip by electrocoagulation, combined with the use of the high voltagt x-rays or gamma rays of radium over the adjacent tissues and the associated lymphatic areas will give more satisfactory results than anything else. If epithelioma of the lip is thus treated thoroly before there are palpable lymph nodes, I be-

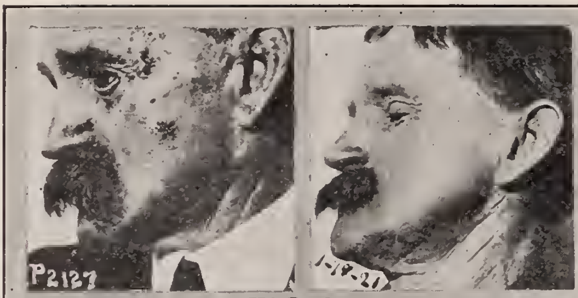

FIG. 1

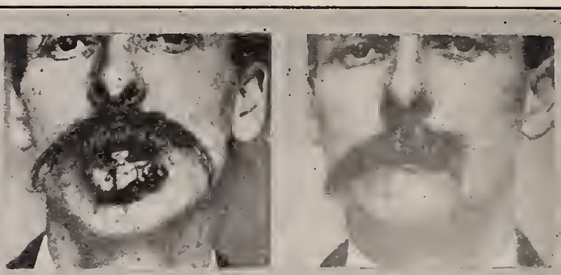

FIG. 2

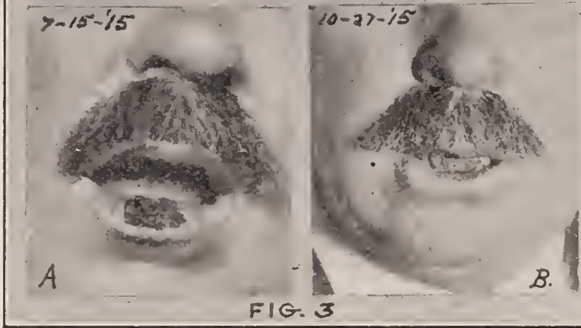

FIG. 3

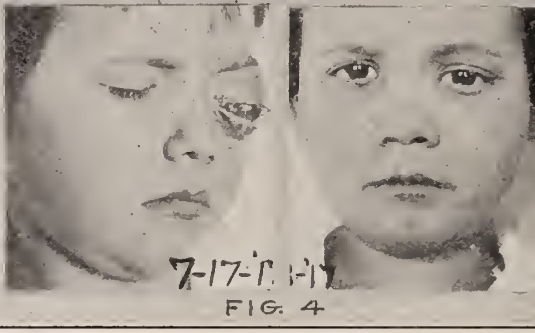

FIG. 4

Fig. 1. (a) E.M Age, 52. Referred by Dr. Jarrett Oct. 13, 1920. Recurrent epithelioma in left temporal region and multiple epitheliomata in the face, with metastatic lymph node below the ear. Illustrating the seriousness of epitheliomata in the temporal region. (b) Showing healing condition, Jan. 18, 1921, after destruction of epitheliomata by electrocoagulation, followed by x-ray treatment and insertion of radium needles into the lymph node.

Fig. 2. (a) G. R. Oct., 1902. Shows very advanced cancer of the lip in a man age 45 years. This had been treated by a cancer paste previously. The patient was given treatment over the lip and the tissues and then was excised surgically and again followed by more treatment. This shows the failure of paste, which should never be used in these kind of cases and shows the importance in some cases of combining the x-rays with surgical treatment. (b) shows the same patient six months later entirely well. He is still well September, 1923.

Fig. 3. (a) W. S. M. Age 49. Referred by Dr. Doebler, April 15, 1915. Epithelioma on lower lip; followed fever blister three years previously. Destroyed by electrocoagulation, followed by x-ray treatment over the chin, lip and submaxillary region. (b) Oct. 27, showing complete healing, patient having no recurrence of metastasis March 15, 1923.

Fig. 4. (a) Sarcoma of left orbit. Duration three months. (b) Oct. 13, 1917. Well, as a result of roentgentherapy. No injury to the eye. Still well Sept. 10, 1923.

lieve that we may count upon 90 per cent of permanent cures. My own statistics, as reviewed in 1921, showed 95 per cent of clinical cures (*Journal of Radiology,* June, 1922). These published statistics can very properly be criticised because the cases had not all passed the five year period, but since then only one case has developed a recurrence. I believe, therefore, that the allowance of five per cent error is sufficient. These results are obtained with the least possible loss of tissue, and without the extensive block dissection made necessary with surgical treatement. In only one patient, who had no palpable lymph nodes when he came for treatment, did we have subsequent evidence of metastasis. In that case, we found that thru some oversight in the office, no radiation had been given to the lymphatic areas. This unfortunate result only serves to emphasize the importance of the above combination which I recommend.

If lymph nodes are already palpable, they should be treated thoroly by high voltage x-rays, or gamma rays of radium, when practical, or at least by x-rays filtered thru 6 mm. of aluminum, applied thru the surface. Then at the end of two or three weeks radium needles should be inserted into the lymph nodes to the value of 80 to 100 milligram or millicurie hours for each cubic centimeter of carcinoma, or at this stage these glands should be thoroly removed surgically. If excision is done within two or three days after the surface application of the rays, no fibrous tissue will have formed and the operation will not have been made more difficult by the previous radiation.

CARCINOMA OF THE TONGUE

I believe this is best treated by a similar combination. Most will depend upon the stage at which the treatment is begun. In advanced cases it is at times desirable to have a ligation of the lingual artery, especially if extensive electrocoagulation is necessary.

CARCINOMA OF THE BREAST

I have been especially interested in the treatment of carcinoma of the breast by radiation, since 1901. For many years we had the opportunity of treating only the recurrent cases, or primary cases that were very far advanced. The good results obtained in the treatment of recurrent cases gradually convinced the associated surgeons that, since the recurrent cancer would disappear in many cases, one could reasonably expect the rays to prevent the development of these recurrences, for we must all admit that the cancer cell had remained in the tissues, from which the recurrences and metastases developed. These results have also convinced the profession that, if the recurrent and scattered disease or advanced cancer can be made to disappear, it should be easier to treat the early primary lesion, or to devitalize the cancer cells by a course of preoperative treatment. I have been recommending this preoperative treatment for many years.

Briefly, in the operable cancer of the breast, I believe that we should give a preoperative course of treatment, during a period of two weeks. If high voltage x-rays are at hand, a mild erythema dose, with rays filtered thru a half millimeter of copper and two millimeters of aluminum, may be directed by cross-fire thru two fields upon the breast. The rays should be directed away from the lungs so far as is practical. Three fields can be used in cross-fire upon the axilla and in advanced cases two or three areas can be used for the supraclavicular and mediastinal. Details can be obtained from my former papers upon this subject.

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This preoperative treatment can be given within a period of about two weeks, at the end of which time an operation can be performed. If for any reason an operation is not advisable, at this same period of time radium needles should be inserted thruout the palpable disease. I calculate upon using ten milligrams of radium element for each cubic centimeter of tissue and leave it in place from six to ten hours. Whether the operation has been performed or whether the radium needles are used, another course of high voltage x-rays is advisable. In all instances the rays should be confined to the probable diseased areas. The high voltage x-ray cannot be used recklessly or at random.

CARCINOMA OF THE UTERUS

More enthusiasm and more confidence in deep therapy have developed from the results of the treatment of carcinoma of the uterus than anything else. This is quite natural, for we have more favorable conditions than in the treatment of carcinoma in any other deep seated organ. We have the opportunity of inserting radium into the uterus and vagina and by this means destroy the local disease, and the disease within a radius of three or four centimeters. We can then apply the high voltage x-rays to destroy the disease in the outlying portion of the pelvis. There will remain some carcinomata which will not yield to radiation, and probably to no other remedial agent. At times it is desirable to destroy a large cauliflower growth by electrocoagulation or by the thermocautery immediately preceding the use of the radium. This is especially important when the growth prevents the application of the radium. In such cases, too, if the patient is not too stout, the high voltage x-rays can be used instead of electrocoagulation and radium.

In the gynecologic clinics of Europe the interest has centered chiefly about the use of high voltage x-rays. In the Frauenklinik of the University of Erlangen, under Professor Wintz, the high voltage x-rays only are being used, and Professor Wintz told me last year that only one case of carcinoma of the uterus has been operated upon out of between 7,000 and 8,000 since 1916.

In America, radium has been looked upon with more favor by the gynecologists such as Clark, Kelly, Schmidt and Bailey. The present position from the use of radium alone is expressed by John G. Clark. He says: "Results of irradiation of cancer of the cervix may remove this class of cases from the surgical field, altho we have not completely yielded this point. Cases of cancer of the fundus, unless too far advanced or unless there is a surgical contradiction, should be submitted to hysterectomy, followed from fourteen to twenty-one days later by a light irradiation of the vaginal fornix." (The Treatment of Cancer of the Pelvic Organs with Moderate Irradiation. Amer. Jour. Roent. Dec. 1922.)

Sarcoma in general yields much more readily to treatment than carcinoma. I believe with equal involvement the result should be about twice as good.

Much has been said and is being said about radium and the high voltage x-rays. One must not lose sight of the fact that they are very powerful agents, and that they can do much harm as well as much good. Much skill in their use is required. Their use must presuppose a considerable knowledge of pathology and clinical medicine, as well as of physics and radiology.

The purchase of an x-ray machine or of a specimen of radium, whether it be large or small, is no more of a guarantee of skill or fitness than is the purchase of a set of surgical instruments a guarantee of ability to do an operation. The results of an incompetent surgeon are usually seen promptly. The bad results of an incompetent radiologist may not be seen for some time afterwards.

CONCLUSIONS

1. The fear of an operation leads to much delay in the treatment of cancer. Therefore, we should hold out other hopes of cure, and teach the laity that a competent and conscientous physician will be the best guide.

2. All precancerous lesions and practically all cancers of the skin can be successfully treated by electrocoagulation and radiation.

3. Epithelioma of the lip should be treated as early as possible, with local destruction by electrocoagulation and by thoro radiation over the adjacent lymphatics.

4. Carcinoma of the breast should be treated as early as possible by radiation before the operation and again after the operation. When possible, a conference between the family physician, the surgeon and radiologist, in each case, will probably result in the best course of treatment.

5. Carcinoma of the uterus can probably be best treated by thoro radiation with radium and the high voltage x-rays carefully used.

6. Skill in radiology, with a thoro knowledge of pathology, clinical medicine and the principles of physics are necessary to obtain the greatest success.

The Etiology of Iritis. The infections found by Ernest E. Irons and E. V. L. Brown, Chicago (Jour. A.M.A., Nov. 24, 1923), in two hundred cases of iritis were as follows: syphilis, alone, 12 cases; with other infections, 26 cases; gonococcal infection, 10 cases; tuberculosis, 8 cases; dental infection, 27 cases; tonsillar infection, 53 cases; sinus infection, 4 cases; genito-urinary, nonvenereal, 6 cases; other infections, 3 cases; no infection found, 3 cases; combined infections, 41 cases, and undetermined, 7 cases.

MYOMA MALIGNUM PARTICULARLY OTHER THAN UTERINE*

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Leiomyoma, as its name implies, is a new growth originating in smooth muscle tissue as distinguished from rhabdomyoma originating in striated muscle. Leiomyomata occur most frequently in the uterus, where they are usually called fibroids. Uterine fibroid is so common that leiomyoma elsewhere in the body is so comparatively rare as to seem to be of more academic than clinical interest. However, leiomyomata do occur almost everywhere where smooth muscle tissue occurs. They have been found in the entire gastrointestinal tract from the esophagus to the rectum, including the gallbladder, Meckle's dicverticulum and the vermiform appendix. They have also been observed in the kidney, the bladder, the testicle and the skin.

Symmers (*An. Sur.*, 1919) said that solitary and rarely multiple leiomyomata averaging less than 1 cm. in diameter will be found in routine autopsies in the walls of the gastrointestinal tract in less than 1 per cent of cases but still too often to be negligible.

Hunt (*An. Sur.*, 1921) reported four cases of myoma of the rectum with twenty from the literature.

Outland and Clendenning (*An. Sur.*, 1913) reported a case of myoma of the stomach in a boy of nine years. They reviewed the literature and reported thirty cases of gastric myoma taken from operation records, autopsy reports and museum specimens. They remark that many of the cases proved to be diagnostic puzzles.

Eastman and Bonn (*N.Y. Med. Jo.*, 1916) report a case of leiomyoma of the pylorus and could find but one other case in the literature. Altogether they could find but forty authenticated cases of gastric myoma and these presumably include the thirty reported three years previously by Outland and Clendenning.

Redway (*Jo. A.M.A.*, 1917) reported from the laboratory of Roosevelt Hospital two cases of leiomyoma of the appendix, found incidental to the routine pathologic examination of surgical specimens and neither of which had advanced to such size as to be of clinical import.

Savatard (*Brit. Jo. Derm.*, 1920) recites the history of four cases of leiomyoma of the skin and reviews forty-four articles in the literature. In these cases it is of interest to know from what smooth muscle the tumors take their origin. It would seem that it must be from the arrectores pilorum or from the muscular coat of the blood vessels.

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* Read before the Thirty-first Annual Meeting of Idaho State Medical Association, Idaho Falls, Ida., June 13-14, 1923.

As for back as 1863 Virchow reported a case of myoma of the stomach, undergoing a metaplasia to become what he then called a myosarcoma. From that time until now reports of malignant changes in myoma have been made with varying ideas as to their classification among tumors set forth. Most, if not all, of the controversial literature has dealt with the uterine type of myoma. The question of classification hinges on whether or not a tumor originating in smooth muscle tissue and developing malignant characteristics shall be considered a myosarcoma or not a sarcoma at all, but a malignant myoma.

Von Kahlden, in 1893, and Williams, in 1894, both held that malignant changes in fibroids are a transition into a sarcoma. In fact, during those early years it was most common to use the term myosarcoma. However, Morpurgo, in 1895, suggested the present name myoma malignum, but this suggestion did not "take" for some years.

Nine years after Morpurgo, in 1904, Ribbert held that a sarcoma, true to name, must originate in connective tissue; and, since the myomata that become malignant take their origin in smooth muscle tissue, they cannot properly be called sarcomata, but should be named, as Morpurgo suggested leiomyoma malignum. Ribbert also challenged the use of the term "degeneration" of the fibroid, holding that the changes that take place are not retrogressive but are progressive.

Boetticher, in Virchow's Archives (about 1894), described three types of intestinal myomata: (1) small multiple nodules with the mucosa free, (2) broad thick masses in the muscle layer with the mucosa adherent, (3) larger polypoid subserous growths which may project into the peritoneum.

I cannot see that this classification has any clinical interest but it is quoted to set forth the fact that leiomyomata other than uterine have been recognized as occurring with some frequency for some time.

Ghon and Hintz (Ziegler Beitrage, Path. Anat.), in their discussion in 1909, follow Ribbert and favor the classification of myomata becoming malignant as myoma malignum and do not consider them to be sarcomata.

In the period about 1912 Aschoff, Kauffman and Hertzler all reverted to the use of the term myosarcoma and applied it as meaning a sarcomatous degeneration of a uterine fibroid.

After another few years the pendulum swung back again to a definite classification of myoma malignum as a clinical and a pathologic entity. There it will probably stay for, as the condition is more thoroly and widely studied, it will be generally recognized and accepted. Ewing describes it in his modern text on Neoplastic Diseases as does MacCallum in his late text on Pathology.

Proper and Simpson (*Surg. Gyn. & Obs.,* 1919) use the term leiomyoma malignum, referring mostly to uterine tumors and affirm positively that they are not uncommon and that they do arise from preexisting benign leiomyoma. These authors offer a very interesting division into three types which seem to represent three stages of progress into malignancy from the histologic standpoint.

(1) Type one represents the benign leiomyoma with long spindle cells and rod shaped nuclei. However, the cells are shorter and fatter than the typical cell. The nuclei are still rod shaped but do show an occasional but infrequent mitotic figure.

(2) Type two has still shorter and plumper cells. The nuclei are now oval rather than rod shaped and the mitotic figures are rather numerous than infrequent as in type one.

(3) Type three has a great variation in the cell morphology.

A careful follow up of twenty-two cases of uterine myoma malignum, with histories of the cases to the end, shows that the three histologic types tally so closely with the clinical history as to make it seem that the types are truly but progressive stages of malignancy. The twenty-two cases of malignant fibroid they quote are those found in 357 fibroids sent to the N. Y. State Institute for the Study of Malignant Disease. This is an incidence rate of 6 per cent. Other reports give the rate of incidence as from 1 per cent to 3 per cent. At any rate the percentage of leiomyomata progressing to malignancy is so great as to justify the advice of these and all modern investigators that all leiomyomata be removed as soon as identified.

Evans (*Surg. Gyn. & Ops.,* 1920) reports 72 cases of myoma malignum in a series of 4,000 uterine fibroids at the Mayo Clinic, showing an incidence rate of almost 2 per cent. He reports that there was one of these malignant uterine tumors for every forty uterine cancers. Evans gives in excellent manner the histologic characteristics of myoma malignum and for details I refer to his article as republished in the Mayo Clinics for 1921.

It is of the greatest interest to know definitely what constitutes a myoma malignum histologically. Without wearisome detail let it suffice at this time to say that mitotic figures found in a myoma-like tumor indicates its ability to infiltrate and thereby become malignant. To demonstrate infiltration accomplished as well as mitotic figures would seem to be quite sufficient. There is no absolute criterion for malignancy.

Evans has done wonderful work in his estimation of the number of mitotic figures in a given cubic unit of tumor tissue and then comparing the count with the clinical history in each case. By this he demonstrates very convincingly that the degree of malignancy varies directly with the number of nuclei showing mitotic figures.

Recalling now not only the nature of myoma malignum but also the frequency of its occurrence as compared to benign uterine leiomyoma and then recalling the fact that benign leiomyoma other than uterine do occur with appreciable frequency, it is now time to consider leiomyoma malignum other than uterine. The first report in point of time is from Virchow who, as before quoted, reported what he termed a malignant metamorphosis of a previously benign myoma of the stomach.

Eastman and Bonn, in their article previously quoted, in which they report forty cases of myoma of the stomach, say that such myomata frequently show malignancy but they seem to offer no reports of cases to support their assertion.

Ghon and Hintz report a case of a man 81 years old with a myoma malignum of the greater curvature of the stomach with metastases in the pancreas, liver, left lung, heart and gallbladder.

In Hunt's report on myoma of the rectum he describes one case with a myoma removed and good recovery for a little over a year, when examination showed multiple small tumors diagnosed as sarcomata. Possibly they might have been malignant myomata.

Symmers, in his report also previously quoted, very pertinently remarks that myoma malignum of the gastrointestinal tract is not only capable of extensive local expansion but of widespread metastasis, being of greater malignancy than uterine myoma malignum. Symmers reports a case of myoma malignum originating at the base of Meckle's diverticulum of the ileum in a man aged 22. It was without symptoms, being found incident to an operation for hernia.

Ghon and Hintz record another case of a man aged 50, representing symptoms of intestinal obstruction with necropsy findings of fifty or more myomata in the walls of the small bowel. Microscopically they presented the appearance of ordinary leiomyomata, plus the large, polymorphous, richly nucleated cells accepted as histologically characteristic of malignant uterine fibroids. In addition to the growths in the intestine there were metastases of a closely related histologic type in the subcutaneous tissue of the abdomen, in the thyroid, lungs, periosteum of the breast bone, intercostal muscles, liver, pancreas, adrenals, kidneys and the marrow of the femur and the vertebrae.

Ghon and Hintz also report a similar and histologically identical tumor of the jejunum in a man of 45.

Landsteiner reports a case of myoma malignum of the gallbladder extending into the liver substance.

There are then reported in the literature up to this time, as revealed by an extensive but not exhaustive review, cases of leiomyoma malignum other than uterine as follows: two in the stomach, one in the gallbladder, two in the small intestine, one in Meckle's diverticulum, and one in the rectum, making a total of seven probable cases. At this time it is my privilege to offer one additional case of leimoyoma malignum, located primarily at the hepatic flexure of the colon.

The patient was a lad aged 16. His family history and his previous history were negative. I saw him first May 8, 1921. For several weeks he had been having pain in his right abdomen, with, at times, very acute pain in the right lower quadrant. He had not been constipated.

Examination showed the patient writhing with pain in the right side of abdomen with tenderness confined to McBurney's pont, and with right rectus rigidity. He had vomited just previous to my arrival. His temperature was 99.6° F. He was taken to the hospital at once. Not being convenient to have a blood count at once operation was done without it.

The abdomen was opened by right rectus incision. There was free fluid in the abdomen, not purulent in character. The appendix was swollen and congested, containing a fecolith the size of a navy bean. A rapid appendectomy was done without exploration or other trauma of the abdomen. Convalescence was marked by a dull pain in the right upper quadrant. Recovery was otherwise uneventful.

The second hospital entrance was July 12, about two months after the first operation. There had been severe pain all over the abdomen much of the time since the appendectomy. Constipation had been increasingly obstinate, with relief from pain after free defecation. The lad had lost weight in spite of a fair appetite and his color was not good. Abdominal palpation was negative. Barium meal roentgenograms showed the barium obstructed at the hepatic flexure of the colon. After the barium was all evacuated a barium enema was given and the plate showed the enema obstructed at the same place. There was no blood in the stools. The urine and blood count were negative.

Operation revealed a tumor the size of a tennis ball in the wall of the colon at the hepatic flexure, with small metastatic tumors the size of a cherry in the mesentery, and free fluid similar to that found at the first operation. The patient's condition was not good and a resection was not attempted but an anastomosis between the ileum and the transverse colon was done. One of the metastatic nodes was removed and sent to the laboratory.

The patient made a fine recovery, having no more pain, a good appetite, gaining in weight, and improving in color. The report from the pathologist was leiomyoma malignum. The diagnosis was based on the similarity of the sections to a uterine fibroid, but with the cells larger and more richly nucleated, as Ghon and Hntz had described, together with the evidence of metastasis.

Altho the prognosis was considered hopeless, the boy improved so much that after three weeks it was decided to remove the pathology as far as possible. After this third operation the patient did very well and went back to farm work and to school.

After more than a year of good health the patient began to have pain and when he appeared examination showed a large mass in the belly. At operation two large tumor masses were found fused together and involving the transverse colon and the ileum. There were also present in the intestinal wall and in the mesentery hundreds of small nodules as well as a few in the abdominal wall. It was hopeless to try to remove the pathology and the abdomen was closed. The patient lived for some weeks and death was due primarily to intestinal obstruction. There was no bowel movement for 13 days previous to death.

Autopsy revealed the main tumor mass the size of a large grape fruit. It was not much larger than at the time of the last operation but the lumen of the bowel was now entirely closed. The small bowel was enormously distended. The metastases in the mesentery had increased in size and number. Contrary to the reports of other cases quoted from the literature, there were in my case no metastases in the kidney, spleen, pancreas, stomach, nor above the diaphragm. The patient died from intestinal obstruction before metastasis became so universal. The liver, however, was much smaller than normal and its lower edge was studded with metastatic nodules. Two of the cases of myoma malignum, reported by Ghon and Hintz, one of the stomach and one of the small intestine, had metastases in the liver, and the case reported by Landsteiner was primary in the gallbladder, extending into the liver.

The specimens and drawings made from sections of them are submitted for your inspection. Sections of the metastatic nodule removed first looked very much like sections of a typical uterine fibroid. There was, however, more irregularity in the shape and size of the cells and more evidence of active nuclear division. Sections from the original tumor showed greater malignancy than from the metastatic nodes with the cells more irregular in shape, some being very close to the giant cell type. Also in one section, made from the original tumor, mitotic figures were found. The tumor and metastases removed at the autopsy were even more malignant, with less muscle tissue remaining and with giant cells and abundant mitotic figures. Grossly and on section these specimens from the autopsy were characterized by a hyaline degeneration destroying the muscle tissue.

It seems that specimens from this case, obtained as they were at different and advancing stages, show advancing malignancy histologically exactly corresponding with the clinical advance of the disease. This is in harmony with Proper and Simpson's three types which are expressive of three degrees of malignancy. It is also in line with Evans' findings of the increase of mitoses as malignancy advanced.

SUMMARY

1. It is important to recognize that leiomyomata do occur elsewhere than in the uterus with sufficient frequency to be of clinical importance. This seems to be particularly true of the gastrointestinal tract.
2. The reason for their clinical importance is the fact that these seemingly benign growths do sometimes prove to be malignant in nature and effect later on.
3. Because of the possibility of such malignancy it is best to remove all such myomata other than uterine as well as uterine, whenever encountered incident to examination or operative procedures instituted for other purposes.
4. It seems to be proper and well established to classify this type of neoplasms as leiomyoma malignum and that they distinctly should not be called myosarcoma.

SPINAL METASTASIS OF HYPERNEPHROMA

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It has been suggested that we report this case, not on account of the ultimate results, but on account of the information revealed by autopsy findings.

Mrs. W. B., age 62, widow, first consulted her physician for the present trouble June 25, 1923. One week prior to this date, she complained of pain in right hip and thgh, on outer and posteror aspects, also of pain in left hip but less severe than in right. Pain has been very intense and gradually increased in severity. Has become so severe as to give her little rest day or night. Five or six days after onset she noted a few small clots of blood in the urine, but no other genitourinary symptoms. Appetite has been very poor. Has noted slight acid regurgitation at times. Bowels constipated, requiring constant use of cathartics, no other gastrointestinal symptoms. There has been a slight irritating cough, very

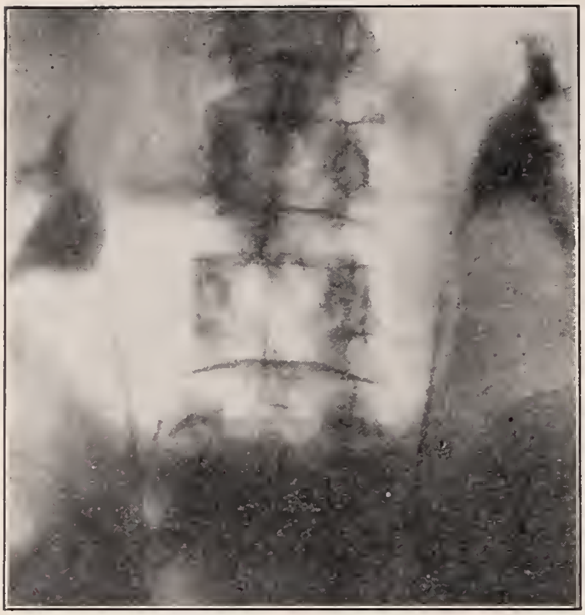

Fig. 1. Pelves of both kidneys well distended. Calyces of both rather poorly filled.

little expectoration. Considerable dyspnea and palpitation on slight exertion. No headaches or other special sense symptoms. Believes she has lost some weight of late, but does not know just how much. Has suffered from profuse night sweatas since onset.

On examination patient is found to be a well nourished woman, sallow complexion, appears ill and in great pain. Nose negative. Mouth shows infected tonsil on left side. Teeth in fair condition. Neck shows no abnormalties. Chest shows fair expansion; patient complains of pain in region of sternum on deep inspiration, but no friction rub could be detected. There is somewhat decreased resonance over right chest in region of angle of scapula, with increased fremitus. No apparent change in the breath sounds. Heart slightly enlarged, no murmurs. B. P. 220 systolic, 120 diastolic. Pulse 86. Abdomen shows a large, somewhat nodular mass, about the size of an orange in the left lumbar region, which moves with respiration. Extremities show no edema. Reflexes are equal and normal in extent. No sensory disturbances could be detected on physical examination.

On account of the severe pains complained of in the hips and thigh, root irritation from spinal metastasis of kidney tumor was at once suspected. In order to clear up the possibility of this condition, and also to eliminate the possibility of metastasis to the long bones, it being known that hypernephromata usually metastasize to the long bones, liver and lungs, the entire skeleton was radiographed by Dr. C. H. Thomson, with negative results. X-ray of chest shows "old peribronchial fibrosis," no evidence of any active process. On account of the patient's symptoms of constipation, colon was radiographed. This showed "marked spasticity of sigmoid. The descending colon passed to the left of the tumor mass, the terminal transverse colon over it. The latter could be displaced upwards over it. No evidence of any organic obstruction."

Cystoscopic examination showed bladder normal. Catheterized urine showed a moderate number of r. b. c. from each kidney. Aside from a few blood cells, the examination of bladder specimen was negative. Functional phthalein (intramuscular injection) showed excretion of the dye from each kidney in 16 minutes. Culture of urine from each kidney showed a few staphylococci. Phthalein functional on bladder urine showed a total of 44 per cent excretion in two hours.

Pyelograms. Pelvis of left kidney opposite third lumbar vertebra, pelvis well filled and regular. Calyces very poorly and irregularly filled. Pelvis or right kidney slightly lower level than the left, pelvis very well filled, calyces very poorly and irregularly filled (fig. 1). Blood examination: Hemoglobin 90 per cent, r. b. c. 4,870,000. Leucocytes 10,000, small lymph. 20, polys 80. Blood creatinin 1.5 mg. per 100 c. c., blood urea 13.4 mg. per 100 c. c., blood uric acid 3.5 mg. per 100 c. c. Wassermann negative.

Neurologists examination. "Knee jerks present, achilles present. No clonus or Babinski. Muscles flabby, no special atrophy or spasticity. No unusual limitation of motion. No sensory disturbance. Some indefinite pains in upper and back parts of thigh; pain is not in skin or along nerve posteriorly, seems to be in muscle deep. Do not think this a spinal lesion."

Operation performed July 14, 1923. Preoperative diagnosis, tumor of left kidney. Postoperative diagnosis, tumor of left kidney.

Findings. Kidney lobulated in upper three-fourths. Lower pole consisted of a nodular tumor mass the size of an apple. Kidney adherent to surrounding capsule, which was very much thickened. Tumor extended downward into left iliac region. Operation performed: nephrectomy with false capsule. Ligation of ureter and vessels separately.

Pathologic report by Dr. O. J. West: hypernephroma of left kidney (fig. 2).

Patient made uneventful recovery, the wound healed by first intention, but she still complained bitterly of pain in the hips and legs. This was so intense as to require opiates for relief. August first she was discharged to Freedlander Sanitarium for further observation and treatment. However, she continued to grow worse, the pain becoming almost continuous in hips and right thigh. Dyspnea became more marked, complained of pain in region of heart. Examination revealed moderate enlargement of heart and liver, moderate general edema, being more marked in the extremities and abdomen. On September 12, as patient desired to go to California and as it was felt that her days were numbered, she was permitted to go, but died shortly after her arrival.

Autopsy was performed by Dr. H. E. Schifbauer, findings of particlar interest. Lungs negative. Heart showed severe grade of myocardial degeneration with hypertrophy of the left ventricular wall. The tricuspid valves showed calcareous deposits on all leaflets, extending to the chordae, with a mild hypertrophy of the left auricular wall. The right and left coronary arteries both showed atheromatous degeneration. Liver: both lobes markedly enlarged, and on section showed numerous secondary growths, extending thruout practically the entire liver substance. Tumors were characteristic of those of a hypernephroma type. The gastrointestinal and pelvic regions were negative.

There was a tumor mass involving the distal end of the left renal vein and artery, extending into the psoas muscle which involved the left obturator nerve. This measured 15 cm. long, 8 cm. wide and 3½ cm. thick. The mass was characteristic of hypernephroma. Above this mass the left suprarenal vein was found, which was apparently normal. Secondary growths were also found in the bodies of the third and fourth lumbar vertebrae, with extension into the dura mater in different lengths, causing pressure on the cauda equina.

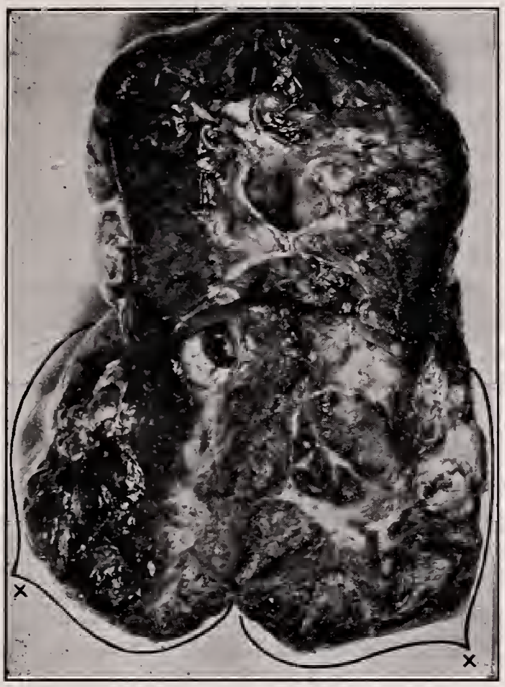

Fig. 2. Lines meeting at X indicate area of hypernephroma. Note that considerable healthy tissue exists between the opening of the pelvis and the tumor mass involving lower pole.

Right kidney was normal size. The upper half was lobulated, stripped of the capsule with difficulty, tearing with it some of the kidney substance. On section the proportions between the cortex and medullary portion of the kidney were normal. Pelvis of the kidney not enlarged, and no thickening found. Ureters normal. Bladder normal.

Cause of death: Myocardial degeneration, stenosis of the mitral valve, coronary sclerosis, metastasis to the liver and spine, local recurrence at site of removal.

SUMMARY

There are several points of interest in connection with this case. 1. The diagnosis of renal tumor seemed evident on first examination, intestinal tympany being obtained between the upper margin of the tumor and costal border, eliminating spleen or other mass in this region. There was mobility of the tumor. On bimanual examination the tumor could be brought almost in direct contact with the palpating hand posteriorly; tympanitic colon could be felt and percussed anteriorly. There was no evidence of any masses extending up from the pelvis, of uterine or ovarian origin.

2. The more elaborate examinations of the genitourinary tract, upon which we usually depend for diagnosis, were of little service. (a) the pyelograms as will be seen from the examination of the plates are essentially negative. (b) Phthalein excretion, while somewhat delayed, was similar in case of both kidneys. (c) Urinalysis was negative except for an occasional leucocyte and an occasional red blood cell.

The reason for the failure of these more elaborate methods of diagnosis will be evident on examination of the specimen itself. It will be noted that the tumor mass is located entirely in the lower pole of the kidney, does not encroach upon the pelvis or the calyces and did not distort either of these structures. It is only natural, therefore, that we sould have a negative pyelogram. It will also be noted that only a small amount of the kidney structure itself is destroyed. It is only natural, therefore, that we should see essentially no difference between the functional activity of the two kidneys. The reason for the relatively few blood cells present in the urine will also be clear, when one examines the situation of the growth.

The first symptoms complained of, and those which brought the patient to seek medical aid, were those occasioned by the metastatic growth rather than by the primary lesion itself. The bitter pains in the right and left hip and limbs were noted by the patient before she even knew of the existence of a kidney tumor. In fact, she did not know of the tumor itself, until drawn to her attention. It was these symptoms of spinal root irritation produced by the spinal metastases which caused us to hesitate in operating on the case.

As is well known, hypernephromata metastasize to the long bones, lungs and liver. The severe pains in the limbs and hips immediately suggested nerve root irritation of probably metastatic origin. In order to absolutely eliminate the possibility of such an extension, the entire skeleton was radiographed, as noted above, and two neurologic examinations were made, also with negative results. We felt justified, therefore, in view of these findings, in attempting to remove the growth, which we would not have done, had we known the real significance of the patient's chief complaint.

Courses in Local Anesthesia. Dr. Robert E. Farr, of Minneapolis, Minn., will give courses in local anesthesia at St. Mary's Hospital, beginning Jan. 7, 1924. They will consist of clinical demonstrations of methods of employing local anesthesia, didactic courses covering drugs used, their preparation, etc. Instruction will be given in anatomy of the sensory nervous system and laboratory courses on the cadaver, with practice of introduction of needles and segmental dissection. Courses will continue a month, beginning on the first and third Mondays.

PREVENTION AND TREATMENT OF SIMPLE GOITER *

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Cleveland Clinic

Since the classical description of myxedema by Sir William Gull in 1874, in which he states that this condition is in some way due to a lack of thyroid function, a great deal of research has been devoted to a study of the physiology of the thyroid gland. Cull's statement regarding the etiology of myxedema was verified by Revirdin (1882) and Kocher (1883), when they observed results of the total removal of goiterous thyroids. In 1891 Murray, and in 1892 McKenzie and others began the use of glycerinated extract of the thyroid gland in the treatment of myxedema and secured very definite results.

The discovery by Baumann in 1895 that iodin was a normal constituent of the thyroid gland constituted the first definite information regarding the chemistry of the gland, altho iodin had been unknowingly used for centuries in the treatment of goiter, and knowingly since the time of Coindet (1820). Since Baumann's discovery our knowledge of the physiology of the thyroid gland and of the relation of iodin to its functional activity has progressed very rapidly. In 1902 Baumann and Roos showed that the iodin was bound with the globulin of the colloid and called the resultant compound thyreoglobulin; and as early as 1907 Marine was teaching that the normal function of the thyroid is dependent upon iodin.

It was shown further by Marine in collaboration with Williams and with Lenhart that there is a very definite relation between the iodin content and the histologic structure of the thyroid gland. They found that in all the animals studied by them—sheep, ox, pig and dog, as well as man—cellular hyperplasia and hypertrophy are due to a deficiency of iodin, and conversely that in general the iodin store in the thyroid varies directly with the amount of stainable colloid and inversely with the degree of active hyperplasia; so that, in the extreme degrees of active hyperplasia as seen in cretinoid states of man and animals, the iodin store may be entirely exhausted. They found also that, if iodin is given to an animal with a hyperplastic thyroid, the gland immediately returns to the colloid or resting state, the nearest approach to the normal gland that a gland which has once been hyperplastic can attain.

It has also been emphasized by Marine that there is but one cycle of changes thru which the thyroid can pass. Starting with a normal thyroid, there is a decrease in the iodin store and a corresponding decrease in stainable colloid. If the iodin store falls below 1 mg. per gram of dried gland, active hyperplasia begins. Normal thyroid cells are flat or cuboidal in shape and are arranged in layers. With the development of hyperplasia the cells become columnar and are piled up until the solid mass of cells fills the acini. This is the characteristic picture of active hyperplasia, following which one of two things must happen; (a) if the iodin deficiency is not met, the process goes on to cellular degeneration and atrophy; or (b), if the iodin deficiency is met, the cells will return to the colloid or resting stage, in which the gland may be functionally normal.

This cycle of changes may take place many times, the resulting colloid goiter being somewhat increased in size with each change. The physiology of this cycle of thyroid changes is the same, whether it occur at puberty, during pregnancy or in the course of the syndrome known as exophthalmic goiter.

The thyroid gland has an extraordinary affinity for iodin and the amount taken up by any given thyroid varies with the degree of active hyperplasia. The maximum store is relatively constant for most mammals, and in those thus far studied averages between 5 and 5.5 mgs. per gram of the dried gland. The minimum amount necessary for the maintenance of normal gland structure is likewise constant, averaging about 1 mg. per gram of the dried gland. The average normal iodin content of the human thyroid gland is about 2 mgs. per gram of the dried gland, and the maximum total store in a strictly normal human thyroid does not exceed 25 mgs. These facts are of the utmost importance in the practical use of iodin in the prevention and treatment of goiter.

In 1916 Kendall had succeeded in isolating the iodin-containing hormone, which he has termed thyroxin. This is a very stable chemical compound ($C_{11} H_{10} O_3 NI_3$), 65 per cent of which consists of iodin. This product produces the same pharmacologic effects as the whole thyroid gland. Chemically either of the halogens, chlorine or bromine, can be substituted for the iodin and a stable chemical compound will result, but it is physiologically inert.

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* Read before the Forty-ninth Annual Meeting of Oregon State Medical Society, Portland, Ore., July 10-11, 1922.

During the years 1909 and 1910 Drs. Marine and Lenhart carried out the first definite and systematic attempts to prevent goiter in animals at the Pennsylvania State Hatcheries. This work, which has been referred to many times, really pointed the way to the practical application of a method for the prevention of goiter in man. The result of the addition of minute amounts of iodin to either food or water obtained by Marine and Lenhart was very striking. The complete elimination of endemic goiter at these hatcheries was achieved within two years. In 1910, initiated by the goiter clinic at Lakeside Hospital, the prevention of goiter during pregnancy was started in every maternity dispensary in Cleveland, and was also being applied by many internists and obstetricians of this district, but the practical application of this principal as a public health measure was yet to be tried.

Early in 1917 the practical application of the principle of the prevention of simple goiter in man was started thru the public schools of Akron, Ohio, by Marine and Kimball. Their purpose was to saturate the thyroid with iodin twice each year, and for this purpose two grams of sodium iodid were given over a period of two weeks each spring and fall. The reports of this work were published each year for four years. A summary of the results as tabulated in the fourth paper is given in the following table:

	Taking		Not Taking	
	Totals	Per Cent	Totals	Per Cent
Normal:				
Unchanged	906	99.8	910	72.4
Increased	2	0.2	347	27.6
Slightly enlarged:				
Unchanged	477	41.9	698	72.8
Increased	3	0.3	127	13.3
Decreased	659	57.8	134	13.9
Moderately enlarged:				
Unchanged	29	20.3	57	64.0
Increased	......	....	21	23.6
Decreased	114	79.7	11	12.4
	2190		2305	

The small amount of iodin necessary to secure saturation of the gland and the precaution that too much iodin should not be given were emphasized in each publication. It was further suggested that, by the administration of a few mgs. of iodin per week thruout the school year, maximum results would be secured and the risk of giving too much iodin during a short period would be avoided.

Early in 1918 the prevention of goiter was started in the schools of Zurich, Switzerland, and the suggestion that a few mgs. per week be given thruout the year was adopted. Thruout all the schools in the cantons of St. Gall, Zurich and Berne, 5 mgs. of iodin per week has been given to each child for over three years and the reports of the health commissioners of these cantons show even more striking results than have been reported in this country. In all the work in this country and in Switzerland not a single case of hyperthyroidism has developed among those treated.

Beginning this year the work in this country has been greatly accelerated by the adoption of this method. Many of the schools in the Cleveland district, in Huntington and Charleston, W. Va., in Hammond, Ind., and in Grand Rapids, Mich., are giving iodin systematically for the prevention of goiter. In most of these cities the school nurse gives to each child one tablet of 10 mgs. of iodin once a week thruout the school year. This seems to be the most scientific and practical manner of administration.

The following, regarding four years experience in goiter prophylaxis in the schools of Charleston, W. Va., was sent to me recently:

1920 No. pupils 2343—Per cent goiterous 61.1
1921 No. pupils 2465—Per cent goiterous 58.0
1922 No. pupils 4002—Per cent goiterous 22.8
1923 No. pupils 4224—Per cent goiterous 27.4

In West Virginia the following cities are now carrying out systematically the prevention of goiter: Huntington, Fairmont, Morgantown, Charleston and Parkersberg, and it is being planned by the state health department to carry this prophylactic measure thru every public school in the state by the next school year. In Charleston during the first three years, sodium iodid was used as in the work in Akron, Ohio, but now chocolate iodin tablets are being used and the measure is much more popular.

Drinking water has been considered as an important factor in the etiology of endemic goiter for centuries. At the beginning of our work, therefore, we assumed that in endemic regions there is a deficiency of iodin in the food and water. Recently McClendon has shown by accurate chemical analysis that in localities where the incidence of goiter is high, the iodin content of the water is very low. That is, water from the lower Mississippi valley contains 100 to 1000 times more iodin than water from the glacial lakes of the northwestern states or water from the basin of the Great Lakes, and conversely, the incidence of goiter is from 30 to 60 per cent. among the school girls of the latter districts, while there is practically no goiter in the lower Mississippi valley and along the Atlantic Coast.

In order to meet the deficiency of iodin in the water, the Health Department of Rochester, N. Y., recently added sodium iodid to the city water supply at the same time the chlorine was added. The plan is to do this during two weeks each spring and fall, the amount of sodium iodid added being sufficient to supply one milligram of sodium iodid to each five gallons of water. The average girl will not drink five gallons of water during these two weeks and will, therefore, get less than 1 mg. of sodium iodid twice a year. This amount is certainly inadequate and, considering the fact that approximately 0.5 of one per cent of the water supply is used as drink or food, this will prove to be an expensive and wasteful method of prevention.

In our earlier papers we stated that the incidence of goiter was about six times greater in girls than in boys. Therefore, only girls have been urged to take the prophylactic treatment. However, examination of all boys and girls in the schools of Grand Rapids, Mich., shows that only twice as many girls as boys are affected; examination of all children in the schools of Charleston and Huntington, W. Va., shows that approximately three times as many girls as boys have goiter; and in some of the schools of Switzerland and less frequently in this country, e.g., in Oakfield, Utah, where the incidence of goiter is nearly 100 per cent, there seems to be little or no difference due to sex. It would seem, therefore, that, altho in mildly endemic districts the normal physiologic changes dependent upon thyroid function during adolescence and pregnancy seem to play a more important role in the development of goiter, nevertheless, in the Great Lakes district, the necessity for the prevention of goiter in boys is of more importance than we at first thought and it is urged that boys be included in the application of prophylactic methods against goiter.

Considering the amount of work done and the number of papers written during the past few years on the relation of iodin to thyroid activity, it is little wonder that this conception has become as common as the knowledge of the relation of iron to the red blood cells. In every article on the prevention of goiter, the efficiency of very small amounts of iodin has been emphasized. Every definite statement that can be made regarding the physiology, the relation of iodin to its histologic picture, the chemistry of its secretion and the cycle of histopathologic changes emphasize this same principle. Yet it seems that many physicians think of the relation of iodin to thyroid medication in the same terms as of K I to the treatment of lues. And, since we are called upon daily to care for goiters which have developed as the result of excessive iodin medication, it may be well to emphasize a few important points regarding the treatment of these patients.

As stated above, we have not seen a case of hyperthyroidism among the several thousand girls who have been taking iodin as administered thru the schools for the prophylaxis of goiter. Yet we have seen many cases in our clinic during the past two years which have been produced or made worse by the treatment prescribed by their physicians. The history of each of these cases has been practically the same; a long standing, distinctly nodular goiter, most of them in adults, with the administration of large doses of iodin over long periods of time. For example, in several cases of large adenomas, the first treatment consisted of five drops of saturated solution of sodium iodid, taken three times daily. The dosage of sodium iodid commonly given is from five to thirty grs., prescribed by the physician after consulting various pharmacologic texts in the belief that he is giving the minimum dose of sodium iodid. We now know, however, that only a functionally normal thyroid could stand such treatment. Moreover, the administration of this amount of iodin is frequently continued for months, as in two cases seen recently, each of whom had taken five grains of sodium iodid three times a day for three months without any interruption. As would be expected, very bad results followed. Besides sodium iodid other commonly used preparations are syrup of ferrous iodid, syrup of hydriodic acid and recently Lugol's solution. Two years ago we saw a bad toxic adenoma in a boy seventeen years of age, who had taken one dram of syrup of ferrous iodid, three times a day, for eighteen months by the direction of his physician.

The maximum amount of iodin that the normal thyroid can hold is, as we have already stated, approximately 25 mgs. The U.S.P. syrup of ferrous iodid contains 41.5 grams of iodid to 1000 c.c. and each c.c. contains 41.5 mgs. of iodin, and each teaspoonful—the usual dose—contains 166 mgs. of iodin. Therefore, the boy whose case was cited, was taking daily 498 mgs. or almost one-half gram of iodin and, as this was continued for a period of eighteen months, the boy received a total of 269 grams of iodin.

The other two cases cited, who were using sodium iodid in doses of five grains t.i.d., were getting 255 mgs. of iodin per dose or 765 mgs. of iodin per day. Each patient received 69 grams of iodin in three months.

The U.S.P. syrup of hydriodic acid contains 14.5 grams of iodin per 1000 c.c. or 14.5 mgs. iodin per c.c.

In the treatment of large goiters and especially of long standing colloid-adenomas, a few mgs. of iodin daily—never more than 10 mgs.—will give the maximum effect. The most effective and safest method of administration is by daily doses during alternate months.

In carrying out the functional test on cases of suspected hyperthyroidism, in which the basal metabolism is followed as the chief index to the thyroid activity, the daily administration of 10 mgs. of iodin gives as immediate and as permanent effects as do 100 or even 500 mgs. and without the bad results which follow the extremely large doses.

From the point of view of thyroid function it makes no difference what preparation or method of administration is used, as long as the thyroid gets iodin in amounts which it can store without excessive stimulation. But from a practical point of view, especially in carrying out the prophylaxis of goiter, the preparation makes all the difference between success and failure. The best preparation of iodin appears to be a chocolate iodin combination, consisting of a vegetable fatty acid (tarric acid—di-iodid), called "Iodostarine," combined with chocolate; which has been developed for this purpose, each tablet contains 10 mgs. of iodine. This product is very stable, is pleasant to take, is most practical for administration to school children and contains the proper amount of oidin, which makes it perfectly safe.

SUMMARY

1. Until some method is found whereby the iodin deficiency in our food and drink can be supplied, the prevention of goiter should be accomplished thru our schools as a matter pertaining to public health and to education.

2. The administration of iodin in small doses once a week thruout the school year, under the supervision of the school nurse, is the most practical method of goiter prevention.

3. Recent examinations have shown that the incidence of goiter in boys would warrant the application of this principle of goiter prevention to boys as well as to girls.

4. The prevention of goiter during pregnancy is as important as its prevention during adolescence and should be a part of the routine care of every expectant mother. The same method as that applied to small children can be employed; 10 to 20 mgs. of iodin per week thruout the entire term should be ample.

5. In the treatment of goiter the dosage of iodin should be considered in terms of mgs. rather than of grs. Ten mgs. of iodin daily for 30 days should be the maximum amount of iodin given to any patient during a single period of administration.

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TOXIC GOITER*

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Review of cases in the Portland Medical Hospital Clinic

Goiters numerically are the most important surgical condition in the Northwest. Dr. Hall of the University of Washington says that 26.37 per cent of the students attending the University since 1908 had goiters. University of Oregon statistics show likewise about 30 per cent. Report of the Public Health League of Washington says that 800 school children in Yakima were found to have goiters. Such a survey would be no doubt the same in every town in the Northwest. The recent army examination showed that 17 per cent of our recruits, 20 per cent in one review of 22,000 soldiers, had goiters.

There is an ever increasing number of simple goiters seen in the Portland Medical Hospital Clinic, corresponding more closely to the numbers in every-day life, pointing to the progressive popularity and attention paid this condition. Mortality in goiter surgery compares favorably with other surgical conditions. Fifty years ago "no honest and sensible surgeon would ever engage in the operation of thyroidectomy," quoting from Halstead's Operative Story of the Goiter.

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* Read before the Thirty-fourth Annual Meeting of Washington State Medical Association, Spokane, Wash., Sept. 20-22, 1923.

Up to January, 1923, 1603 goiter patients were seen in our Medical Hospital Clinic; 1169 operations were performed on 1052 thyroid cases, with 22 deaths, a mortality of 1.8 per cent for number of operations and 2 per cent for number of patients operated on. Eleven deaths followed 127 litigations with 8.7 per cent mortality and 11 deaths followed 1018 thyroidectomies, a mortality of 1.08 per cent for thyroidectomies.

Up to 1919, 74 per cent of the thyroid operations were upon toxic goiters; from 1919 to 1922, 68 per cent; from 1922 to June, 1923, 62 per cent. The proportion of simple goiters has materially increased, due no doubt to the better education of the laymen in preventative medicine. Furthermore, there is an increasing attention paid to adolescent enlargements of the thyroid, which can unquestionably be helped medically.

It is not difficult to make a clinical classification of goiters; more difficult to apply it. There are many cases which are not distinctively one type or the other, some which lapse from one stage to another. The following is directed to a consideration of our toxic goiters, which broadly includes hyperlastic goiter and toxic adenoma of the thyroid. The following must be differentiated:

A symmetrical enlargement of the thyroid gland appearing in young women and girls often presents the picture of a toxic goiter, symptoms of nervousness, irritable disposition, rapid heart, loss of weight and, indeed, the facies of a mild exophthalmic goiter ensue. Pathologically these conditions are a colloid enlargement; a few small adenomata may be found thruout the gland. The metabolic rate apparently shows quite an elevation above normal at the first reading. Repeated tests, however, show that these patients have not an increased metabolic rate. Pemberton states in a recent article that the metabolic rate is always normal. These cases are not surgical, unless there is a mechanical obstruction to the trachea. They respond very successfully to medical treatment, small doses of iodine being given during two ten day periods in the year. This supplements the deficient thyroid function, for the adolescent goiter is a deficiency disease. Furthermore, all foci of infection, such as teeth and tonsils, should be removed. Seventy-four per cent of our adolescent goiters were found to have infected tonsils.

Simple adenoma is often accompanied by moderate toxic symptoms, as nervousness, occasional palpitation of the heart, dyspnea after exercise and sometimes mechanical interference with respiration. Examination reveals a single or multiple adenoma of the thyroid, moderate, regular heart, normal or near normal metabolic rate and no evidences of wasting. Operative treatment is not different, however, and is always recommended upon the following grounds: for its cosmetic effect, for the removal of a mechanical obstruction, and because simple adenoma often changes into a toxic adenoma. It is only the degree of toxicity that differentiates this goiter from the toxic ademona. Otherwise, all adenomas may be designated as goiters with mild, moderate, marked or extreme symptoms. Dr. Terry of San Francisco takes this view.

Borderline cases are often seen, which are definitely cases of hyperthyroidism, questionably surgical. Hyperplastic thyroids in many instances take care of themselves and respond quickly to rest and general care. However, hospitalization, forced feeding and other measures have yielded no benefit in some cases, the improvement being very transient and the patients returning too soon with the same picture. Nervousness, loss of weight, lack of endurance and general malaise may be a little more exaggerated than before. Partial thyroidectomy is indicated and in every case, treated thus in our clinic, excellent results have been obtained.

Acute thyroiditis is in reality toxic goiter. This is not a common condition, only two cases being seen in this clinic in nineteen months. Both were found to have an enlarged, tender thyroid, elevation of leukocytes in the blood and acute tonsillitis. These cases were treated as secondary infections and eventually subsided.

Toxic goiter hence reduces itself to two types: (1) adenoma with hyperthyroidism and degenerating forms of the same, and (2) toxic hyperplastic thyroid more commonly called exophthalmic goiter. These two classes compose over half the goiter surgery in our clinic. Of 704 operated cases since January, 1919, of which we have a more complete record, 259 thyroidectomies were performed for toxic adenoma. There were three deaths, a mortality of 1.2 per cent. Mortality rates run in long waves. For example, over a course of three years there were only two deaths from toxic adenoma and still again over another period of two months there were two deaths.

Of the 704 cases referred to above, 274 operative cases were toxic hyperplastic goiters; 370 operations were performed on these 274 cases, with a mortality of 3 per cent for number of cases, and 2.4 per cent for number of operations. Our mortality in this group as determined by former survey was 3.7 per cent. Some improvement has been made.

Eleven of the above 704 cases were malignant goiters, complete thyroidectomy being done in each case. No immediate mortality but a mortality of 33 per cent after the three year period. One case diagnosed as sarcoma of the thyroid has been treated with radium and apparently improved. The operated cases have been pathologically reported as carcinoma.

The etiology of toxic goiter is obscure. These facts have been observed, however, in reviewing our cases. Eighty per cent of the patients are women, married state apparently making no difference in the incidence. Much the greater percentage are housewives, other occupations, representd in small numbers, being clerks, teachers and stenographers. The proportion is 48 per cent housewives, 52 per cent being distributed over a large number of others. Nativity includes almost every state in the Union and many foreign countries, but present location is confined to the Northwest. Yet it is very commonly known that the Northwest is the apex of the goiter belt. Eighty per cent were well and strong during childhood, 27 per cent had adolescent goiter, 19 per cent had family histories of goiter, 22 per cent had tuberculosis in the family, 14 per cent had cancer, and 8 per cent cardiac disorders in the family; 83 per cent had had all the childhood diseases, 68 per cent had definite histories of ear, nose and throat infection, 14 per cent state that the goiter started after influenza.

The factor of age varies somewhat between the two types, hyperplastic goiter occurring most commonly in the fourth decade among women and fifth decade among men, our average age for women being 35, for men 46. Toxic adenoma occurs most commonly in the fifth decade, the average age being 45 years, the same for men and women. The youngest exophthalmic goiter was 14 years old, the oldest 67; the youngest toxic adenoma was 22, the oldest 76. Twenty-two per cent gave a history of irregular menses, the only other manifestation of the endocrine disturbance.

Seventy per cent of toxic adenomas gave a history of a simple enlargement of the thyroid before toxic symptoms ensued. The average interval between the appearance of the adenoma and the onset of toxic symptoms was 14.2 years. This fact alone should make simple goiters of the adenomatous type an urgent surgical condition. Many patients relate that toxic symptoms followed a shock, nervous strain or physical exhaustion. Apparently some toxic goiters are clear-cut cases of the end results of nervous or physical strain, brought on by illness, grief or financial worry.

Symptoms of toxic goiter as given by our patients were found to include a long list: tumor, nervousness, loss of weight, tachycardia, palpitation, exhaustion, naseau and vomiting, dyspnea, vertigo, tremor, exophthalmos, failing eyesight, profuse sweating, and other general symptoms too numerous to name. There are always, however, four or five cardinal complaints. There is always nervousness, some cardiac disturbance, loss of weight and weakness, in such degree as correspond very accurately with the anatomic findings in the case.

Examination of these toxic goiters showed ears negative in almost every case, eyes impaired in 14 per cent. In 27 per cent of the exophthalmic goiters there was exophthalmos; tonsils infected in 77 per cent; teeth infected in 50 per cent; gums infected in 16 per cent; cervical glands enlarged in 70 per cent; chest negative in 60 per cent, the remaining 40 per cent of chests showing poorly developed, 27 per cent; old fibrosis 7 per cent., bronchitis 2 per cent, tuberculosis 1 per cent; hearts toxic in 74 per cent, mildly toxic in 26 per cent, enlarged in 18 per cent, the latter being for the greater part adenomas; abdomen tender in 7 per cent, extremities edematous and swollen in 10 per cent, tremor in 24 per cent, reflexes entirely negative.

Laboratory work reports albumin in the urine in 12 per cent, sugar in the urine in 4 per cent. Six cases of glycosuria were put under control and found to be irrelevant to the thyroid condition. Blood count negative in 70 per cent, leucocytosis in 15 per cent. Blood pressure average in the hyperplastic goiter 130, in the toxic adenomas 140, pulse pressure normal. Metabolic rates average +40, the lowest being around 30 and the highest +90. In almost every case the metabolic rate corresponds with the degree of thyrotoxicosis. In taking metabolic rates it has been our experience that the first rate will be usually out of proportion, accounted for by the initial added nervousness of the patient.

Partial thyroidectomy was done primarily in all cases of toxic adenoma. In 30 per cent of the cases the heart, the vulnerable point in these cases, showed signs of injury before operation was done. In these cases rest in bed for three to ten days was allowed prior to operation; the heart was digitalized. Improvement always took place up to a certain point, usually within ten days, after which there was apparently a standstill. Thyroidectomy was performed at this time.

Hyperplastic goiters were found to respond to rest, digitalis, liquids, primary ligation of one or two poles, ligation not more than one pole at one operation, and of late lugol solution. We now use lugol solution freely in these hyperplastic goiters, and with good results, the pulse often dropping 20 or 30 points within twenty-four hours. Thyroidectomy was performed after an indefinite interval, during which time the patient may come to within reasonable safety. One severe hyperplastic toxic goiter was kept in bed for five months.

End results. We have had an operative mortality of 1.8 per cent for number of operations, and 2 per cent for number of patients operated on. Ligation has proved to have the highest mortality rate, 8.7 per cent. This must, of course, be tempered by the fact that ligation is performed on the more advanced hyperplastic cases, in whom the ravages of the disease have made great inroads into the patients' strength. Questionnaires were sent to all operated cases, and altho it has been impossible to get a report from everyone, we have sufficient data to allow us to believe that 87 per cent of the hyperplastic goiters and 89 per cent of the toxic adenomas have obtained a satisfactory result, 88 per cent successful. In 25 per cent of all the cases there has been a return to perfect health. In 63 per cent the patients have been able to resume their normal activity and they are fairly well and happy.

The outstanding postoperative complaint is heart trouble, occasional palpitation and some irregularity. Auricular fibrillation has been seen in six or seven postoperative cases; these have responded favorably to quinidine administered very cautiously. There is no question but that a great deal of permanent pathology is left in the heart in those cases of severe toxic goiter, especially the toxic adenoma, and in almost every case we find that operation has been delayed by the patient beyond a reasonable period.

Most satisfactory of all the items in the reports is the universal disappearance of nervousness. This always proves gratifying to the patient. An average gain of 15 pounds in weight over an average period of two years has been reported by these patients.

Three cases of postoperative insanity have been recorded, one of which is the following: An elderly woman operated on for a toxic adenoma, advanced type, returned to her home after two months convalescence; her condition was very satisfactory, she was very happy and feeling fine. She found that her flower garden had been torn up and disfigured by thoughtless intruders. Her grief developed into a violent dementia, in which condition she died very shortly after.

The reports on the item of exophthalmos show very slow return to normal. In no case has a recurence of enlarged thyroid been reported. Two cases of tetany have been controlled by glandular extract of the parathyroid gland. One was very transient, the other requiring treatment for several months.

Postoperative results among the men have been almost 100 per cent good, altho in almost every case the goiters were of the very severe type. Results are also uniformly good among the younger women, the less satisfactory being in the forties and fifties, which latter in many instances are complicated with other medical conditions.

Subsequent to leaving the hospital seventeen patients have died, one of pituitary disease, one of influenza, three of metastatic carcinoma, primary in the thyroid, one of paralysis, and the remaining of some cardiac condition.

The pathology of toxic goiter is based upon the disturbed quotient of thyroid constituents in the blood. This may take different forms. Unquestionably hyperplastic goiter in its acute stage is a deficiency. Supplying iodine to the patient immediately relieves the symptoms. Grossly the gland is moderately enlarged and hard; microscopically there is diffuse hyperplasia of parenchyma. The toxic adenoma probably yields a distinctive toxic substance which, when it gets into the blood-stream, causes an entirely different disease. This may be explained by the degree of degeneration that is often found. Microscopic section shows one or numerous incapsulated adenomas, sometimes growing rampant in a malignant degeneration. The acini in many instances are plugged with colloid and there are always to be found areas, in which the epithelium has become redundant and hyperplasia has taken place. However, these areas and this same picture are found in simple goiters with no toxic symptoms.

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TREATMENT OF GOITER *

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The term goiter, altho applied as a rule to enlargements of the thyroid gland causing more or less permanent swelling of the anterior portion of the neck, may also be applied to enlargement of thyroid tissues elsewhere in the body.

The treatment of goiter must be divided into different classes, due to different types of goiter which demand various different procedures. In this paper I have attempted to review the different literatures and have attempted to choose the more classical modes of treatment that have met with practical results.

First, I will discuss the treatment of *simple nontoxic goiter.* The prophylaxis is a very important fact in this type of goiter. From the various researches of the etiology of simple goiter, they have found that there are located thruout the world certain goiter areas and, from further study into the geology, soils, waters, vegetables and plant life within these areas, that all are very low in iodine contents. The theory was advanced that iodine had a great deal to do with the formation of goiter. Such investigators as Kimball and Marine have substantiated this theory by their curative effect upon goiterous subjects by the administration of minute doses of iodine. The use of sodium iodid may be given without danger of toxic symptoms other than perhaps an iodid rash, which quickly disappears in succession of treatment. We have substantiated the findings of recent investigators in the treatment of our cases by the use of iodine mixed with common table salt (this can be gotten in different concentrations as desired), and there is no danger of an excess to be feared, as only so much sodium chloride is tolerated by the functions of the body. Numerous other preparations are obtainable which give the same results, as long as iodine is present (especially the chocolate covered tablets, which are more favorable to children).

In regard to vegetable life, iodinized manure is redommended for fertilizing. This one factor alone was given big credit in Switzerland for destroying certain areas of endemic goiter, because it replaced the human fecal material that played an important role by the distribution of toxic forming bacteria, which entered the body thru foodstuffs or water, explaining why the boiling of water was found advantageous. The above conditions were found to favor endemic cases, but many sporadic cases showed marked results by the removal of focal infection of teeth, tonsils, fecal stasis and other sources of toxemia. We are not, therefore, dealing with a specific cause but several, more probably, many toxic agents capable of causing goiter.

It is the opinion that this goiter can be successfully treated during its earlier stages without surgical intervention, providing that an intelligent inquiry is made into its cause, and the functions of the gland are taken into account as factors in the morbid process. The chief aim is to eliminate the cause of the toxemia. To do this the entire pharmacopeia has been exhausted but, as long as elimination has been reached, the end result is the same.

Under the curative treatment for nontoxic goiter many drugs have been used. In some cases of goiter, as in adolescent girls especially or those due to hereditary or focal lesions of the gland during febrile diseases, the swelling is merely due to an effort of the gland to compensate thru increased activity. Iodine and small doses of thyroid gland, as one-half grain t.i.d., with iron, if there is an anemia, will cause the gland to recede. Care must be used in the indiscriminate use of iodine in youth, as it exerts injurious effects on the gonads, causing atrophy of the epithelial constituents and formation of connective tissue.

In cases of chronic goiter of the endemic type, especially if it is dense and hard under palpation or where there are pressure symptoms, iodine is not well borne. The iodine will not be taken up by the gland and will act as a general toxic, causing cardiac distress. In these cases and those in which other medical procedure and eliminations have not accomplished the results, surgical removal becomes necessary. At present the general consensus of opinion among surgeons is that surgical treatment is demanded, first, when the goiter is large, to correct disfigurement; second, when pressure is exerted on the trachea, esophagus, larynx, or cervical and thyroid structures; third, when the enlargement is rapid or malignancy is suspected; fourth, when symptoms of hyperthyroidism, especially cardiac distress and tachycardia appear.

The x-ray has been used and is still advocated by a few, but there is danger of causing more dangerous symptoms, because it is hard to control dosage and if sufficient dosage is not used it causes stimulatio of the gland and, if too much is used, atrophy or myxedema symptoms may appear later. There are advocates of injection into the gland of iodine, hot water, quinine, urea, etc., as well as different vaccine treatments, but they have not been looked upon as favorable sources of treatment.

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* Read before Pierce County Medical Society, Tacoma, Wash., Sept. 25, 1923.

Toxic Goiter. There may be some confusion as to the meaning of toxic goiter. In the toxic forms enlargement of the gland may exist in the absence of constitutional symptoms. The toxic goiter has no definite onset and usually occurs in patients who have suffered from thyroid enlargement since puberty. The average length of thyroid enlargement has been found to be fourteen years, with the usual age of trouble as thirty-four years. The presenting symptoms are usually those of failing compensation. The symptoms are usually more mild at first, with periods of remission but each reappearance is more severe than the preceding one and the stages of remission and exacerbation are shorter than those of exophthalmic goiter. The gland in the toxic adenoma, as a rule, is nodular and asymmetrical. The metabolic rate is also lower.

Toxic adenoma should always be treated surgically. The time of operation is extremely important because operative procedures during the period of remission of the symptoms are usually favorable but during the height of toxicity or advancing toxic symptoms have proven dangerous. Radium and x-ray have been used and highly advocated by some to reduce toxicity but, due to their forming adhesions and from uncertainty of doses, are gradually being discarded. The metabolic rate is one of the best guides for operative time. The chief indication against operation is the high basic metabolic rate, a plus fifty being considered a safe maximum rate. Broken compensation (and this does not depend upon the rapidity of the pulse rate, but upon ability of the heart muscles to contract properly) and myocardial degeneration are contraindications for surgical procedures. When contraindications are present, prolonged and absolute rest will restore the balance as a rule, but in extreme cases ligation is advisable, preceding surgical removal.

Exophthalmic Goiter is a disease due to toxemia of focal, systemic or neurogenic origin which, by provoking a defensive reaction of the thyroid apparatus, causes it to secrete its physiologic hormone in excess, thus provoking in all tissues, including the nervous system, correspondingly active and destructive catabolism. The exophthalmic goiter may be differentiated by the definite and early onset and predominating nervous symptoms. These symptoms are, in order of appearance, nervousness, tremor, acceleration of heart, weight loss, thyroid enlargement, weakness, insomnia, exophthalmus, diarrhea, vomiting and mania. All methods in the treatment of exophthalmic goiter should be alike in their aim to reduce the basal metabolism. Not all cases of exophthalmic goiter may require surgical treatment, but all that are treated medically should be treated with the view of preparing the patient for surgical procedure later. This may not be necessary but usually is.

Exophthalmic goiter in reality, altho due to emotional stress, fright, violent emotion, grief or anger, is closely allied to the toxic goiter. The effects upon the nervous system are such as to cause excretion into the blood of toxic wastes (neurin in particular, which causes excessive reaction of the thyroid). The thyroid hormone further damages the nervous system by breaking down systemic fats, fatty bodies, and myelin, which all nerves and their cell body contain, thereby forming a vicious cycle. In order to control this disintegration and reduce to a minimum the production of waste, absolute mental and physical rest is essential.

Another important factor in control of these waste products and productions of thyroxin is the diet. For this patient it should be such as not to excite thyroid hormone production, at the same time having sufficient caloric value to supply the excessive demand from increased metabolic rate. It has been found that proteins increase hormone production and carbohydrates and fats decrease. Therefore, avoid a diet of proteins, as meats, foul, fish, oysters, etc., feeding the patient on milk, butter, cream and foods rich in carbohydrates and fats which decrease thyroid production. Care must be observed as to acidosis, but by careful testing of the saliva with litmus and conservative use of alkalis this can be controlled. The bowels must be closely watched for fear of toxic products being absorbed from stasis. Mild catharsis, or enemas which are even better, handle this matter.

As a result of catabolic drain, muscular tissues of the entire body begin to relax, causing weight loss and general vasodilation, affecting as it does all vessels. This accounts for the diarrhea, weakness, low blood pressure, weak cardiac action, exophthalmus, headaches, cutaneous heat flushes, itching and sweating. It is at this point that symptomatic treatment is instigated. The most helpful remedies are the vasoconstrictors, as ergotin, salicylates, with quinine hydrobromide; ergotin as a constrictor, salicylates to stimulate hepatic antitoxins, quinine for vasoconstriction and phagolysis, and the bromide in the hydrobromide to decrease the ringing in the ears, caused by the quinine. Other drugs may be used for vasoconstrictors as pituitrin, adrenalin, scopalamin, and spartein, and the bromides to control hypersensitiveness thru the sympathetic system. Arsenic is used as one of the most important drugs, by its interference with metabolism lessening oxidation of the tissues and reducing the excretion of carbondioxide, thereby decreasing the hypersecretion of the toxic hormone.

The internal medicines that can restore to nerve cells their functional constituents are thymus gland (which contains the phosphorous-laden nuciles) in 5 grain doses or more as desired, t.i.d., and lecithin in dram doses, t.i.d., to supply nerve food direct, while syrup of calcium lactophosphate is used to control the tremor in two dram doses t.i.d., p.c. The calcium also increases muscular tone of the heart and blood vessels. The dosage and amount of these drugs are controlled by repeated vasometabolic reading but it has been found that the greatest results will be obtained in the first two weeks of treatment. After that length of time improvement is slow and other procedures may have to be used to obtain the desired results.

Other measures which we do not follow in the treatment of our cases, but are recommended by some, are the use of the x-ray and gland injection of hot water and quinine urea. The former we have found very unsatisfactory and the latter too dangerous to attempt in private practice, considering the results obtained. The surgeon has gotten better results by first putting his exophthalmic goiter cases under medical treatment to eliminate, if possible, the morbid process or the primary cause of intoxication, which spurs the thyroid to excessive activity.

One important point in the postoperative treatment is the special care of the hypoglycemia that takes place in the patient directly following the operation. The blood sugar during a severe postoperative reaction always drops below normal, due to the flooding of the general circulation with thyroid secretion from manipulation of the gland. This secretion utilizes all available carbohydrates, including the glycogen reserve of the liver and muscle tissue and, if of sufficient amount, causing the hypoglycemia. But this condition can be easily overcome by the intravenous injection of glycose solution (10 or 20 per cent). Many a stormy convalescence can be controlled, if blood sugars are taken and sufficient glucose is supplied to maintain the carbohydrates reserve.

The metabolic rates are taken, three, seven and twelve weeks after surgical procedure and suitable glandular therapy instigated, if indicated. After surgery the metabolic rate falls rapidly, with a secondary rise, followed by a final rise; while after x-ray treatment, there is a gradual fall of the metabolic rate.

I have not touched upon the x-ray technic for the treatment of goiter nor upon surgical technic but have tried to write this paper from a medical standpoint.

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THE CONSERVATIVE MEDICAL AND SURGICAL TREATMENT OF GOITER *

J. C. Moore, M.D.
SEATTLE, WASH.

In the paper which I am presenting this evening you will probably consider that some of my statements are radical rather than conservative. After weighing them carefully I believe you will agree with me that the supposed radical after all is the conservative treatment.

Before attempting treatment in any given case the most essential thing is a complete and correct diagnosis. The usual routine in our office, when the patient presents herself for an examination, is to make a thoro physical examination, including complete blood, urine, etc., fluroscopic examination for any disease of the mediastinum, enlarged thymus, or affection of the chest and the heart. The blood pressure and temperature are taken. An examination is made of the throat, any vocal infections noted, also any abnormality of the vocal cords. The patient is then asked to present herself the following day for a metabolism test, this being of help to determine the severity of the disease. We are often surprised to find a hypothyroidism, where we had expected a hyperthyroidism, and of course this will modify the treatment whether it be medical or surgical.

The prevailing types in this country are the adolescent, colloid, adenoma without hyperplasia, adenoma with hyperplasia, exophthalmic, thyroiditis and malignant. There may be cases which combine two or more of these types. Affections of the thyroid are more prevalent in the female than the male at the ratio of 6 to 1 but, where goiter is endemic, this ratio changes. There are three periods in a woman's life, when she is apt to have thyroid disturbance. These are at the time of puberty, during her childbearing period and at the menopause. The first type is that of an adolescent goiter and is usually a simple hyperplasia generally with a normal metabolism. If the patient is living in a country, where goiter is not endemic, a simple enlargement of the thyroid usually subsides with her full maturity but in a country where goiter is endemic, unless she is given treatment, it is apt to persist but without subjective symptoms until her first pregnancy. With childbearing period a persistent adolescent goiter is most likely to begin giving subjective symptoms.

The type usually seen at this time is an adenoma, altho we may have simple hyperplasia, cystic, large colloids, and frequently, where the labors have been very difficult, exophthalmos may develop. Treatment will depend upon the classification. The third type occurring at the menopause is usually degenerative, cystic, degenerated adenoma, and occasionally exophthalmic and always the possibility of malignancy.

The adolescent goiter responds readily to treatment, which consists of regulating the diet, the use of boiled or distilled water, some form of intestinal antiseptic and the combination of organic therapy with some form of iodine. Occasionally adenoma develops in children as also does the exophthalmic type in girls of six years of age. These cases are rare and I only mention them as of interest and the result of improper treatment. The withdrawal of thyroid and iodine and putting the patient at rest usually cures these cases.

With the adenoma there is only one successful form of treatment and this is surgery. If the physician generally would recognize these cases and realize the importance of early operations, the surgeon would have 100 per cent cures and the mortality would be practically nill. As adenomas are insidious in their onset but steadily progressive, they usually have done considerable damage to the heart before they are recognized and the proper treatment given.

Dr. Plummer, of the Mayo Clinic, first called attention to the fact that this type of goiter usually had persisted for twelve to fourteen years before the patient began having subjective symptoms. One of the early symptoms, and one that is invariably complained of by all patients who are suffering from adenoma with hyperplasia, is fatigue. This symptom should be a warning that, unless relief is soon given the patient, degeneration of the heart muscle will have occurred and the heart will be permanently damaged, altho the adenoma will have to be removed. Adenoma without hyperplasia should also be treated surgically for cosmetic purposes, to relieve pressure symptoms and also because a certain portion of these patients develop hyperthyroidism.

Colloid goiter, unless associated with adenoma, is usually amenable to medical treatment unless its size is so great that pressure symptoms are caused by it. Medical treatment for the colloid is practically that of the adolescent, the exhibition of iodine

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* Read before King County Medical Society, Seattle, Wash., Nov. 19, 1923.

in some form and thyroid extract or thyroxin. I have found more uniform result with thyroid extract than thyroxin.

In the treatment of exophthalmic goiter the object is to diminish the activity of the thyroid gland. Dr. Pemberton (*Arch. Surg.,* July 19, 1923), makes the following statement: "As result of increased knowledge of the disease and of the dangers incident to surgery and owing to the fact that patients are coming to operation earlier, before the development of visceral changes, the surgical mortality has been reduced to 1.005 per cent in terms of operation and 1.74 per cent in terms of cases. The natural fluctuating course of the disease makes it difficult to evaluate any form of treatment, unless sufficient time has elapsed to preclude the possibility of recurrence.

Questionnaires were sent to 482 patients with exophthalmic goiter, to which 349 replies were received. Ninety per cent were living; seventy-nine per cent considered themselves cured or greatly improved; eight per cent were improved, but showed signs of hyperthyroidism or its effect and three per cent were not benefited. In analyzing the data concerning these patients lack of improvement can be traced definitely to (1) incompleteness of operation, (2) long duration of hyperthyroidism before operation and (3) failure to eliminate after operation foci of infection."

If one will take the trouble to review the literature of goiter surgery, he will find that results from the leading operators are very much the same. The mortality is found to be a little over 1 per cent, which compares most favorably with the results of other major surgery. He will also find that they all report about 70 per cent complete cures. Why do we only have 70 per cent complete cures? Let us review the history of goiter surgery and perhaps we may find the answer.

It was only a few years ago that surgical removal of a goiter was attempted and then only by the most competent and fearless operator, whose mortalities were fearfully high and, owing to the exceedingly high rate of mortality, few cases were recommended for surgery. The majority were treated medically and were generally conceded to belong to the province of the internist but, in spite of the innumerable remedies and "cures," the death rate continued so high under medical treatment that many cases still sought surgical relief. To Theodore Kocher of Berne, Switzerland, should be given the greatest amount of credit for standardizing the technic of goiter surgery, and the gradual reduction of the number of operative deaths that has followed, until today, as stated above, surgery of the thyroid compares favorably with any other branch of major surgery.

In spite of the results obtained by competent surgeons, many cases are treated medically until visceral changes have occurred before the case is recommended for surgery so that, altho the operation successfully removes the goiter, the degenerative changes in the heart muscle, the kidneys and the central and sympathetic nervous system have occurred and the patient is invalided for life. Or the case is so far gone that she is sent to the surgeon to be given the "last chance." The surgeon does his best but the patient dies. This is unfair to the patient, the surgeon, the medical profession and the prospective patient with an incipient goiter who, watching the outcome of the "last chance" patient, is frightened away from an operation at the time it would have resulted in a complete cure.

It was not so long ago that most you you can not remember when we had the same controversy over a case of appendicitis. How many of you would treat a case of acute appendicitis medically now (except for some special reason), and take the chance of the appendix rupturing and this to be followed by the numerous sequels of such an event. To quote the Japanese schoolboy, "I require no answer." Yet, in the case of a toxic adenoma or an exophthalmic goiter, the visceral changes occur just as surely if not so quickly as they do in a case of appendicitis. Let us be consistent and, if we consider these cases medical, carry them on to the finish, and not shove them on to the surgeon to be given the "last chance."

I do not wish you to receive the impression that I recommend surgery in all cases but, owing to the intensive studies during the past decade of diseases of the endocrine of glands, our knowledge of the pathology has increased and our diagnosis has become more exact and as a result we are better able to foretell the clinical course a given case will follow. So, when we know that a certain case will steadily progress to complete invalidism, why wait until this occurs. Is it not more conservative to interfere earlier and thus restore our patient to 100 per cent efficiency?

The leading internists of both this and foreign countries now concede that all thyrotoxic cases belong to the domain of the surgeon. With a better understanding of diseases of the thyroid among physicians and the diffusion of this knowledge to the laity I predict that the next decade will show a vast improvement in the percentage of complete cures in our operative cases, for the physicians will recommend and the people will expect earlier operations in all goiter cases that are essentially operative.

In the medical treatment of goiter true conservatism begins with the unborn child. Especially is this true where goiter is endemic, as it is in the Pacific Northwest. The normal iodine content of the thyroid gland is 1-10 of 1 per cent. Owing to the deficiency of iodine in water, soil and foods here, every expectant mother should be given small doses of iodine during pregnancy. Unless she receives sufficient iodine to maintain the normal content, the thyroid of the fetus will attempt to function and the child will be born with a goiter. The majority of goiters in men and boys are of this type. We are indebted to Marine, Kimball and Lenhart for the practical and efficient method of prevention of goiter in endemic districts. The Public Health League of Washington is now carrying on a campaign of public education to popularize this method of prevention and I ask your support of this campaign.

Thyroiditis is rare and surgery is not often indicated. Those cases requiring surgical interference are of a suppurative, tuberculous and woody type.

One thing the average woman fears following a goiter operation is a disfiguring scar, and as a result of her fear surgical relief is often postponed until she has become a chronic invalid. Much can be done toward making scars that are practically unnoticeable. I have varied my technic in the last year to a considerable extent. First, by making a much smaller incision, and by undermining the skin and platysma with or without the division of the pretracheal thyroid muscles, one can secure a fairly good exposure with a surprisingly small incision thru the skin. By opening into the surgical capsule of the thyroid and by the use of sutures as tractors the entire gland can be brought into a good exposure, the blood vessels secured and the desired portion of the thyroid removed without difficulty. Then by thoro hemostasis, so that postoperative oozing is obviated, the wound may be closed without drainage and, if absolute approximation of the skin edges are secured, the resulting cicatrix will be one you will not be ashamed of. When you have decided that surgery is necessary in a given case, the careful preoperative preparation assumes an importance in direct ratio to the severity of the disease.

Foci of infection, such as abscessed teeth, infected tonsils, infected sinuses, gastrointestinal toxemia, pelvic or other infections, should be sought for and removed, or appropriate treatment given. As these toxic cases are peculiarly susceptible to acidosis, they should be thoroly alkalinized previous to operation.

Minor operations, such as the injection of boiling water, cauterization and single pole ligations, are of value not only by limiting to certain extent the absorption of toxic secretions, but also because they give you an idex of the patient's surgical resistance. One must graduate the surgical trauma to the resistance of the patient. I know no branch of surgery, where clinical experience and keen diagnostic ability are of so much value as in surgery of the thyroid.

Dr. Crile credits much of his success to his method of anoci-association. Yet, when you review the results of other operators who are using widely varying methods of anesthesia and who secure equally good results, you believe with Dr. Crotti, "That Dr. Crile gives too much credit to his method and not enough credit to his own ability, his years of clinical experience, and to his fine sense of surgical judgment which enables him to correctly estimate the surgical resistence of the patient and to regulate the surgical trauma accordingly."

Personally I favor the combined method of anesthesia. By use of nitrous oxide and oxygen, with the infiltration of one-half of one per cent novocain the patient may be kept just under the surface and by so doing you avoid the psychic shock incident to operating with local only. A trained anesthetist, however, is necessary when giving nitrous oxide as a higher percentage of oxygen is used with it.

Blood pressure determinations during anesthesia provide a safety factor in foretelling an impending shock at least fifteen minutes in advance of the other well known changes which usher in such a calamity, thus enabling one to quickly conclude his operation or to change his procedure as the necessity may demand.

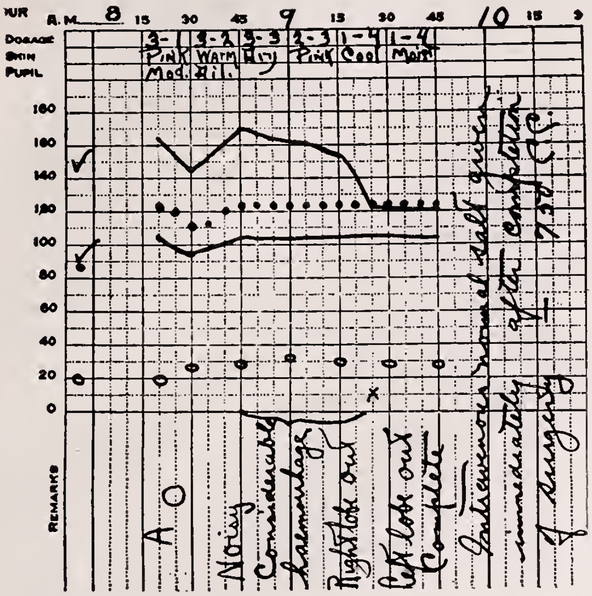
I give the following case report to illustrate the value of blood pressure determination during anesthesia:

Mrs. J. R. J., married, age 26.

Diagnosis: Exophthalmic goiter.

Clinical history: Has lost twenty pounds in weight in past six months, loss of strength, very nervous, frequent headaches, marked tremor—4 plus, fatigue.

Family history: Parents both living and in good health, four brothers living and well, three sisters living and well.



Note sudden drop in blood pressure curve below that of pulse rate.

Past history: Appendectomy, 1914. Has two children, ages 14 and 16 years. Labors normal. Menstruation scanty.

Physical examination: Weight 120, pulse 120. Blood pressure 135-70. Exophthalmos, Stellwag, Graefe and Moebius signs present. Exophthalmos very pronounced. Basal metabolic rate 54 per cent plus. Skin moist. much perspiration of palms. Neck shows uniform enlargement of thyroid. Bruit and thrill over right superior thyroid artery. Enlargement more prominent on right lobe. Heart, no organic lesion. Abdomen negative. Fluoro of chest; no enlargement of thymus or other pathology noted. Patella and olecrenon reflexes exaggerated. Blood and urine examinations negative.

August 21, 1923: Left superior thyroid ligated. Patient had a very marked reaction following second ligation. Persistent vomiting and temperature for 48 hours. Following second ligation patient was sent home and kept in bed two months. General condition improved and gained in weight. Was readmitted to hospital Oct. 20. Under local and nitrous oxide 10 c.c. boiling water injected into right and left lobes. Very slight reaction following.

October 31: Under local and gas anesthesia, resected both right and left lobes, leaving small section of each lobe attached to posterior capsule. When resection of second lobe was complete patient's systolic blood pressure (as shown in the attached chart) took a sudden drop from 160 to 120, going below the pulse rate. Wound was packed with gauze, patient given an intervenous injection of sodium bicarbonate, glucose, calcium chloride in normal salt solution and put to bed. She reacted very well to the treatment and her condition was so satisfactory the following morning she was again anesthesized and operation completed.

As the patient had shown a severe attack of acidosis following second ligation, she had been thoroly alkalinized previous to operation and when warning came from the fall of the blood pressure all operative treatment was stopped and measures as outlined above were given to prevent shock and acidosis. She made very satisfactory and uneventful recovery, which result I am sure would not have followed, had we not taken the timely warning given by the fall of blood pressure as noted above.

CONCLUSIONS

1. Careful diagnosis and classification of all cases.
2. Adolescent, simple hyperplasia and certain types of colloid goiter should be treated medically with few exceptions.
3. Medical treatment should not be unduly prolonged in toxic cases until irreparable degenerative changes have occurred.
4. Careful preoperative preparation of patient.
5. Never operate during height of toxic wave.
6. In very severe cases graduate your surgical trauma to resistance of individual case.
7. Conclude your operation as quickly as possible consistent with good surgery, avoiding excessive manipulation and hemorrhage.
8. As the majority of these cases are in women, particular attention should be paid to cosmetic results, not only because of the satisfaction to the patient and surgeon, but also because many a woman, thru fear of a disfiguring scar, has postponed operation until her health has been irreparably damaged.
9. The value of blood pressure readings during anesthesia to foretell an impending shock.

The Efficiency of Arsphenamines. A reliable basis for comparing the efficiency of therapeutic agents is the chemotherapeutic index, that is, the relation of the maximum tolerated dose to the minimum curative dose. Judged by this standard, the chemotherapeutic index of D.R.L. Neoarsphenamine, which generally passes a toxicity test of 350 mgs. per kilo of body weight, or higher, (from 75 to 100 per cent better than Government requirements) is about 58.3.

A leading syphilographer recently wrote: "We are using D.R.L. Neoarsphenamine with great satisfaction in my clinic and at the hospital, and very rarely have any reactions that amount to anything. The therapeutic results have been extremely satisfactory. In my private practice, our results have been so good that I personally could not be persuaded to use any other product. We rarely have any patient complain of reactions, and the curative properties of the drug have been such that in secondary syphilis the first course of ten or twelve injections is invariably followed by a negative Wassermann test."

NORTHWEST MEDICINE
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EDITORIAL

SIR ASTLEY PASTON COOPER

"First observe and then think," was the motto inspiring the life of one of the most distinguished surgeons in medical histry. Altho Sir Astley was descended from a line of medical ancestors, his eminence and success were the result of his unaided efforts. His position as the most papular surgeon in London during the first quarter of the nineteenth century was the result of his untiring energy and persistence in hard work. Few medical men have ever pursued the study of the healing art so incessantly. It is said that he dissected every day of his life. His routine was to rise at six, dissect until eight, breakfast on rolls and tea, see poor patients until nine, attend consulting practice until one, then visit the wards at Guy's Hospital. He lectured on anatomy at St. Thomas Hospital at two, then aided the students in the dissecting rooms, after which he visited or operated on private patients until seven. After bolting his dinner and taking a short time for sleep, he would continue his rounds until midnight. Does any reader of these lines or any one of his acquaintance pursue a systematic daily routine that will match this record?

It is not surprising that he was a pioneer in many phases of surgical venture. Perhaps his most spectacular operation, which is always mentioned in his biography, was the ligature of the abdominal aorta for aneurism, which no one of his contemporaries was sufficiently venturesome to attempt. His books on hernia, injuries of the joints, diseases of the testis, anatomy of the thymus gland and that of the breast were authoritative for his day and furnish instructive reading for the physician and student of this day. He was one of the first teachers to substitute practical demonstrations for the old didactic methods of teaching which were universal at that time. He attributed his professional success to his uniform and unfailing courtesy to rich and poor alike, as well as to his zeal and industry. These facts concerning this distinguished and famous member of our profession, culled from biographic sketches of his life, might well serve as stimulus to the earnest student and ambitious practitioner of the present day.

DEVELOPMENT OF THE UNIVERSITY OF OREGON MEDICAL SCHOOL

The University of Oregon Medical School is the one Class A medical school west of Denver and north of San Francisco, and serves the largest territory of any medical school in the United States. It was established in Portland in 1887 by a charter from the regents of the University and was merged with the Willamette University Medical School in September, 1913, when the alumni of both school were combined under the Medical School of the University of Oregon.

In 1914 twenty acres of land, occupying a commanding position on Marquam Hill overlooking the city, was given by the Oregon-Washington Railroad and Navigation Company as a site for the school of medicine and affiliated hospitals. The first unit of the group was made possible by state appropriations of $100,000 and $25,000 given by citizens of Portland. The second and main unit of the group was erected at a cost of $269,500, of which the Rockefeller Foundation gave $162,500. Of the amount given by the Rockefeller Foundation, $50,000 was for equipment. The building and equipment of the Medical School has been pronounced the most modern of any school in the country. This has been made possible because it was built complete from the start and was able to take advantage of the experience of other institutions in planning its own buildings.

The University Medical School has recently increased its efficiency by the adoption of a program, whereby students expecting to enter medicine begin their premedical work at Eugene, taking three years there, and complete it with four years at the Medical School in Portland. Students entering the University at Eugene from the high school, intending to study medicine, are now enrolled at once in the newly established department of medicine. This new arrangement makes it possible to introduce students immediately to carefully arrange clinical work, where problems are examined in the light of the sciences taught in the University at Eugene. It permits the student to begin at Eugene, even tho in a small way, some investigation which he may later continue at the Medical School in Portland. By the addition of a year to the so-called premedical years, time is allowed for social and humanistic studies, not otherwise possible but of profound importance in the life of a physician.

DOERNBECHER MEMORIAL HOSPITAL FOR CHILDREN

Oregon will have the first general children's hospital in the Pacific Northwest, as result of a gift of two hundred thousand dollars to the University of Oregon for the establishment of the Doernbecher Memorial Hospital for Children on the campus of the Medical School in Portland. The gift is made by Ada Doernbecher of Portland and Edward Doernbecher of Seattle in memory of their father, the late Frank S. Doernbecher, pioneer furniture manufacturer. This gift brings the total of the gifts in money and valuable collections made to the University of Oregon gift campaign to three-quarters of a million dollars.

"Nothing has been more needed in the Northwest than a children's hospital," said President P. L. Campbell in accepting the gift. "This splendid memorial will not only contribute to the cure of children in its care, but will provide for investigation of how to prevent their diseases, and will add greatly to the clinical reources of the medical school. This new hospital and the one for crippled children soon to be completed by the Shriners will place Portland in a notable position among western cities."

"The terms of the benefaction provide for the most scientific medical and surgical care of children requiring hospitalization, whether they are destitute, of moderate means or rich, preference in general being given to children of this state," said Dr. Richard B. Dillehunt, Dean of the Medical School. "The hospital will afford facilities for all the branches of medicine and surgery, but will in no way duplicate the work of the Shriners' Hospital for Crippled Children, which will care only for crippled children under the age of fifteen, whose parents are unable to pay and whose disabilities are correctable by orthopedic surgery.

"Apart from the untold benefit that will be derived by the young patients in the Doernbecher Memorial Hospital, perhaps the most impressive and far-reaching effect of the endowment is its provision for teaching students of medicine in the medical school, and its dedication to the acquisition of further knowledge thru scientific research. The object of the hospital is to relieve suffering and prolong life. To accomplish this end to the fullest degree, it will fulfill three functions: It will provide the place and the equipment and the personnel for the treatment of sick children, regardless of their financial status; it will contribute materially to the better care of children outside the hospital by enabling better teaching of future physicians; and it will do its share in the prevention and cure of disease and disability in children thru the scientific study and research into the problems of disease that are still unsolved. It embodies, therefore, the ideal and most modern conception of the hospital and its service to the community. It will be a pride to the University Medical School; a source of the greatest gratitude on the part of the people of Portland and of Oregon to the wisdom of those who have turned the benefaction in this direction; and an ever active and everlasting memorial to the beneficent man whose name it will bear."

SCHOLARSHIPS AWARDED BY AMERICAN CHILD HEALTH ASSOCIATION

A few months ago announcement was made of resident and travel scholarships for physicians which were to be awarded by the American Child Health Association. Announcement has been made of the fifteen physicians, to whom such scholarships have been awarded. Selections were made from over one hundred applicants, received from thirty-six states. These awards are made on the basis of graduates from accredited medical schools and evidence of special interest in child health work as shown by training and experience. Among the applicants were a few from the Pacific Coast, being three each from California and Montana; one from Oregon, and four from Canada. The only Pacific Coast physician, to whom an award was made, is Dr. George A. Lamont, of Vancouver, B. C. In general terms the purpose of these scholarships is to stimulate interest in child health work and provide means for better study of the subject by physicians.

NATIONAL BOARD BULLETIN

Since the organization some years ago of the National Board of Medical Examiners, the number of states has increased each year, whose Boards of Medical Examiners accept certificates of the National Board. Seven have been added during the past year, making the total twenty-eight, in which these certificates are now recognized. The National Board has just issued the first number of a publication, called *The National Board Bulletin,* the purpose of which is to establish a method, thru which its candidates and others interested in the work of the board may be more fully informed of its work and progress. By this means information will be disseminated regarding examinations and all details concerning the same. The reason for the existence of this National Board of Examiners is to establish a standard examination for certificates for the whole United States and its territories, thru which its diplomates may be recognized for licensure to practice medicine. If any organization is destined to establish uniform medical license, it seems as if this National Board of Examiners will be the organization to accomplish that result.

ASSOCIATION FOR THE STUDY OF GOITER

During recent times one is often impressed with the fact that there is no end of the formation of medical societies for all sorts of study and purposes. One of the latest is The American Association for the Study of Goiter, which is said to be composed of goiter surgeons, pathologists, anesthetists, internists and radiologists. Its annual meeting is to be held in Bloomington, Ill., Jan. 23-25. The usual program of papers, demonstrations and clinics will be provided.

MEDICAL NOTES

OREGON

Blanket Insurance for Society. The Councillors of Oregon State Medical Society have accepted the offer of General Accident, Fire and Life Assurance Corporation to write a blanket policy for defense liability insurance to cover its members. The company's liability for loss from any one event is limited to $15,000. The premium for this policy is $21 per year. This protection for the members of the society is conditioned on at least 80 per cent of the members becoming policy holders. This protection is in addition to that obtained thru the medical defense carried by the society on its own defense fund.

The Cedars Offered for Tuberculosis Patients. The Cedars, the recent Portland institution for treatment of venereal patients, may be converted into a county institution for the treatment of tuberculosis patients in the country, for whose treatment no adequate provision is made. The recently completed county hospital has not been equipped for the receipt of these patients . The county commissioners state that no provision has been made for the maintenance of such an institution. The Cedars may, however, be adapted for this purpose.

New Hospital to Be Built. The Methodist church proposes to build a fifty bed hospital at Marshfield, to cost $100,000. It will be of stucco material, of Class A quality. It is hoped to begin work on the building soon after the new year.

Physician Receives Strange Accident. Last month Dr. H. R. Cliff, of Portland, county physician, received severe injuries following a strange series of accidents. While driving at night in the fog, he turned to avoid a stalled auto, when suddenly a truck confronted him coming from the other direction. In an endeavor to avoid this, he collided with auto number one. While rendering assistance to a companion who had been injured, a heavy wrecking car, which had been summoned for the relief of the first auto, crashed into his car and one of the others, injuring him and another companion.

Physicians Receive Verdict. Drs. A. C. Crank and E. Kidd, of Portland, were last month prosecuted by a patient who claimed they had permitted her to swallow a plate of false teeth during an operation. At the conclusion of the plaintiff's testimony the judge ordered a verdict in favor of the defendants.

Elected Vice-President. Dr. E. A. Sommer, of Portland, was elected first vice-president of the American College of Surgeons, at its recent annual meeting in Chicago.

Dr. H. A. Canfield, who has practiced for twelve years at Drain, has located for practice at North Bend.

Dr. E. H. Hobson, who has practiced for several years at Scio, has located for practice at Salem.

Dr. O. W. Westlund, recently from Duluth, Minn., has recently settled for practice at Marshfield.

Medical Wedding. Dr. E. W. Morse, of Portland, was married to Miss Ada Doernbecher of that city on Oct. 27.

Dr. B. L. Norden. of Portland, was married Nov. 23 to Miss Mary F. Warren of that city, recently from Malone, N. Y.

WASHINGTON

Suit Against Physician Dismissed. The trial of Dr. W. A. Shannon, of Seattle, last month for violation of the Beeler Act, prohibiting the dispensing of narcotics to addicts, resulted in a disagreement of the jury. Ten were for acquittal, while two stubborn jurors refused to discuss or debate the question and declared they would stand by conviction to the end. Public sentiment generally considered the case against the doctor entirely unjust and the result of undue eagerness on the part of the police to convict some doctor for this offense. A few days after the mistrial the prosecuting attorney requested the dismissal of the case, which request was promptly granted by the judge.

Standardized Hospitals. The approved hospital list of Clinical Congress, of the American College of Surgeons, gives nineteen hospitals in Washington in the standardized list. Fifteen of these contain one hundred or more beds, with four between fifty and one hundred beds. They are distributed among the different cities of the state.

Hospital Has New Manager. The Sumas Hospital has obtained the services of a new manager. Miss Wilde, formerly from St. Lukes Hospital, Bellingham, took charge of the institution Nov. 1.

Hospital Wants a Name. Mrs. W. E. Stevens. who formerly managed the Sequim Hospital, has opened another at Port Angeles, which will be for the use of the physicians of that city. In order to secure the proper name for the institution she offers a reward of five dollars for the most suitable one which is proposed.

A Man of Triple Identity. An individual recently figured in Seattle, posing as Dr. Boston, who did a brisk business forging prescriptions for narcotics. Garbed as a lumber jack, he presented the prescriptions and had them filled at certain drug stores. At the same time, under the name of Goggins, an admitted addict. he worked for the narcotic agents as an informer, leading them to places where dope was being sold.

Walla Walla Valley Medical Society held a meeting at Walla Walla, Nov. 16. There were thirty physicians in attendance from Dayton, Pomeroy, Waitsburg and other towns. Dr. E. H. Von Patten, of Dayton, read a paper on "The Injuries Within the Medical Fraternity." A committee was appointed to consider the matter of arranging for talks to be given by physicians over the radio.

Cowlitz County Medical Society held a meeting Nov. 8, at the Hotel Monticello in Longview. There was a large attendance and the medical society was reorganized. Plans were discussed for the establishment of a general hospital. A paper was presented by Dr. Ward, of Portland.

Doctor is Champion Shot. Dr. C. L. Templeton, of Seattle, heads the list in the season's averages of the Seattle Gun Club, breaking 242 targets out of 250 shot at, getting an average of .968 per cent.

Dr. T. R. Laughbaum, formerly from Michigan, who has practiced for some months at Entiat, has moved to Nespelem, where he has been appointed medical officer for the Colville Indian Reservation.

Medical Missionary. Dr. Iva Miller, of Yakima, has sailed for China, where she will spend the next four years as a medical missionary.

Dr. C. W. Crompton, who has practiced at Sedro-Woolley for the past four years, has moved to Seattle, where he has established himself in practice.

IDAHO

Hospital Dedicated. Late in October the Latter Day Saints Hospital was dedicated at Idaho Falls. The institution has been built at a cost of $300,000. It is a Class A hospital with accommodations for more than fifty patients. Patients will be received under the treatment of all reputable physicians.

Scarlet Fever Epidemic. In the early part of last month an epidemic of scarlet fever in a mild form prevailed among the children at Moscow and other towns in Latah County. It was believed there were many mild cases not reported to the health officers.

Diptheria Epidemic. During the early part of last month a diphtheria epidemic existed at Mackay. Seventeen cases were reported with three deaths. By the middle of the month the epidemic had subsided and quarantine was lifted.

North Idaho District Medical Society held a meeting at Lewiston, Nov. 23. The following officers were elected for the ensuing year: Pres.. J. R. Stevenson, Moscow; vice-pres., J. M. Finley, Orofino; sec'y-treas., J. H. Einhouse, Moscow.

Criminal Charge Dismissed. Last month Dr. James Monroe, of Buhl. was held on a charge of second degree murder for an alleged illegal operation. At the preliminary examination the judge dismissed the case on the ground that no evidence had been offered to sustain the charge. No evidence was offered in behalf of the defense.

Dr. D. P. Higgs, formerly a resident of Boise, has located for practice at Council.

Dr. O. F. Call, mayor of Rigby, where he has practiced for the past four years. Has recently moved to Pocatello where has has located for practice.

Drs. E. N. Roberts and W. F. Howard, of Pocatello, returned last month from the clinical congress and convention of American College of Surgeons, as well as the Tristate meeting at Des Moines, Ia.

MONTANA

To Complete Hospital. The Board of Directors of the Kennedy Deaconess hospital at Havre, have decided on measures for the completion of their hospital. Some time ago the institution was started and about $90,000 expended on its construction. It is a substantial up-to-date building and its completion is looked upon as a necessity.

New Superintendent for Hospital. The Deaconess Hospital. at Butte, is in charge of a new superitendent. Miss Marguerite J. Fisher, of Washington, D. C.. has been appointed to that position. She has had an extended experience in connection with hospitals in the East.

Veterans' Hospital Crowded. The Veterans' Bureau Hospital at Fort Harrison at Helena contains 158 patients, a fifty per cent increase during the past two months. About one hundred of these are tuberculosis cases.

Appointed County Health Officer. At a recent meeting of the Board of County Commissioners at Helena, Dr. Arthur Jordan was appointed county health officer for one year.

Epidemic Threatened. According to the warning issued by the city physician of Butte, an epidemic of contagious diseases was last month threatened that city, as indicated by the increase in scarlet fever, measles and chicken pox, and the wide spread exposure among school children. It was charged that parents had failed to ascertain the nature of the children's ailments.

OBITUARIES

Dr. C. W. Cornelius, of Portland, Ore., died Nov. 1, after five months illness. He was born near Hillsboro. He graduated from Pacific University in 1877 and began the study of medicine with a doctor in his home town. Two years later he opened a drug store in Spokane. In 1880 he entered the medical department of Willamette University. After leaving there he managed a pharmacy until 1885. For two years he leased and operated a theatre in San Francisco. After a time spent in mining ventures he resumed the study of medicine and graduated from the University of Oregon Medical School. He was coroner of Multnomah County in 1894. In 1898 he followed the gold rush to Alaska and practiced for a time in that territory. On returning to Portland he engaged in the real estate business and in 1906 he built the Cornelius hotel. Some years ago he retired from active practice and devoted himself to business enterprises.

Dr. Wallace W. Potter, of Seattle. Wash, died Nov. 17. While standing on a street corner an automobile ran into him, knocking him to the pavement and producing fracture of the skull from which he died in a few hours. He was born at Providence, R. I., in 1849. He was of the fourth generation of doctors. He studied at Brown University for two years and followed with medicine at University of Michigan and Bowdin College. He obtained his medical degree at Bellevue Medical College, New York, after which he served as an interne at Charity Hospital. He began practice at Providence, joining his father who was a physician. In 1880 he moved to Augusta, Wis., where he practiced until 1889, when he moved to Spokane. He remained there in practice until five years ago, when he retired and since then has lived in Seattle. He located at Spokane a few months before the fire which burned the business section of the city and destroyed all his possessions, including his library. For a number of years he was health officer of that city.

Dr. Clarence E. Barton, of Baker, Ore., died Oct. 26, as result of tuberculosis. He was born at Kaysville, Utah, in 1875. He graduated from the Medical School of the University of Chicago in 1904 and practiced for a short time in that city. He located at Baker in 1905. In 1919, with seven other doctors, he established the Baker Clinic, of which he was president until he retired from practice about a year ago. Since that time he has spent a part of the time in California, returning to Baker about four months ago.

Dr. J. S. Stevens, of Seattle, Wash., died No. 17, after a brief illness. He was 59 years of age. He came to Seattle twenty-five years ago. Besides practicing medicine he managed a drug store for many years.

REPORTS OF SOCIETY MEETINGS
WASHINGTON STATE MEDICAL ASSOCIATION

MINUTES OF THE THIRTY-FOURTH ANNUAL MEETING OF WASHINGTON STATE MEDICAL ASSOCIATION, HELD AT DAVENPORT HOTEL, SPOKANE, WASH., SEPT. 20-22, 1923.

(Continued)

SECOND SESSION

JOINT SESSION OF HOUSE OF DELEGATES WITH CONTACT COMMITTEE

A quorum being present, the meeting was called to order.

In calling for the reports of the Contact Committee, which the President reminded the House had been formed for one year, he stated that three meetings had been held—the first in Spokane last November; the second in Seattle in February of this year, and the third in Seattle at the time of the Northwest Medical Meeting.

The Hospital Standardization Committee, Dr. Geo. Swift, Chairman. (Dr. Swift's report was read by Dr. Coe.)

Your committee begs to submit the following report of the activities during the past year.

Publicity: A Department of Hospital Standardization was established by the Editor of Northwest Medicine and each month an article has appeared on some phase of Hospital Standardization. The following subjects have been covered: The Physical Examination Slip, Personal History Slip, Surgery of the Future, The Application Card for the Attending Staff, The Small Hospital, Lay Assistants, Survey of Tuberculosis Sanatoria, Anesthetics and Anesthetists, The Curse of State Medicine.

This department has given an opportunity to familiarize the profession in the Northwest with many of the problems of Hospital Standardization and by repetition of the important factors involved, the profession as a whole has become well acquainted with the purposes and desires of the national organizations dealing with this subject.

New Hospitals: An effort has been made by the Committee to secure a new community hospital for Port Angeles. This effort was unsuccessful, however. Whether this was due to the failure of the physicians to get together and support a common project or to financial difficulties on the part of the committee that was appointed to organize the hospital, to religious differences of the factions involved or to a combination of all three is hard to state. The fact remains that Port Angeles and the Penninsula are in need of a new hospital. Perhaps some religious organization will enter the field in the near future. At the present time there doesn't seem to be any definite plan for handling the situation.

In Everett a modern 100 bed hospital is under construction. One of the members of the Committee, Dr. West, has been very active in handling the problem from the medical standpoint and the Everett doctors are to be congratulated on the hearty cooperation that has been manifested throughout. When the State meeting is held in Everett the members of the Association will appreciate the great work that has been done there.

In Wenatchee since the last meeting the two new hospitals have been opened to the public. Neither of the hospitals is equipped with x-rays at this writing and, therefore, the diagnostic work from that standpoint is not done by the hospital. Both are fairly well equiped in the pathologic laboratories; the case records have been properly installed; the staff organization has been completed on the open plan. As soon as the x-ray equipment is installed and in use these hospitals will go on the accredited list. The physicians in the Wenatchee valley have worked in close harmony and have assisted materially in developing these two institutions.

A number of small hospitals have been built, mostly by physicians. Of these the Leavenworth hospital, perhaps, is the largest and will probably ultimately be a 50 bed hospital. This hospital will supply the upper Wenatchee valley with good hospital facilities. A new hospital at Oroville has been built but has not been reported to the Committee. This is true of several small hospitals. The enthusiasm for Standardization has now reached the point, where practically every physician who owns and operates a small institution is desirous of increasing its efficiency. Requests have been received from a number of institutions and as soon as possible a representative of the Committee has investigated and assisted in standardizing these places. An illustration is the hospital operated by Dr. Bridges at Eatonville. Dr. Whitacre has had charge of the work. This is a hospital with 16 beds and an average of 15 patients a day. They have a complete set of case records, three physicians on the staff and without a doubt are able to do excellent work. This is only one of many similar places. Wherever the Hospital Standardization movement has been developed, the people have become acquainted with it and now remain in the small community for their surgery. This is the public's response to the standardization movement.

Future Problems: The problem of the future in the large hospitals as well as the small institutions is one of application of the spirit as well as the letter. A hospital may be standardized according to the College of Surgeons or any of the national organizations, and yet be absolutely useless from the standpoint of the physicians in attendance and the betterment of future cases. To illustrate, a large hospital laboratory has been doing fairly good work. It is under the direction of a part-time physician who is well paid for his services. His records are badly kept, so badly that he cannot give today the number of Wassermanns or the percentage of blood Wassermann positives in comparison with spinal fluid Wassermann positives, and yet he has a record of all of his cases. They are of no use, of course, and his value to the hospital is practically nil. That hospital has not produced and probably will not produce a report of any value for a number of years, due to the fact that they do not know anything about their records. The same hospital has a splendid equipment for case records and has good case records, but apparently no doctor on the staff desires to make use of those records from the standpoint of statistical observation for the future. The hospital has no internes who might be interested in such a study. Calmly analyzed, this hospital in one of our large cities has a fine building, good equipment, is standardized according to the College of Surgeons, is acceptable for internes according to the American Medical Association, is doing a tremendous amount of general medicine and surgery and yet has absolutely no spirit of Standardization. None cares whether the records that are being compiled daily are filed in the roof garden or put in the cellar. The institution as a benefit to the profession is nil, as a convenience for patients and physicians it is 100 per cent.

Compare this institution with a smaller one in the same city in a poor building, fewer rooms, where the staff knows why it is not necessary to take coagulation on tonsils because of a report by the internes on the result of 1,000 tonsillectomies; where the laboratory has reported on the number of normal appendices that have been removed; where the laboratory checks every piece of tissue that is removed and in all important cases is demonstrated on a lantern slide at a staff meeting. If you go into the laboratory, the attendant can tell you at a glance exactly what has been done in any phase of laboratory work, give you correct figures and comparisons, in fact is a great help to the doctors connected with this institution. Or go into another hospital in the same city and you will find the pathologist in constant consultation with attending physicians. It is the pathologist who gives the serum in meningitis, encephalitis and puerperal sepsis, who makes the antivaccines, who checks with his guinea pigs and rabbits on tuberculosis and streptococcus infections. In short, the pathologist is the mainspring of the institution. That is Standardization, altho in this same institution the internes are not being given proper education and the management can be severly criticized for lack of coordination in the various departments.

There is a little hospital that is now drawing some of the better men in both medicine and surgery as well as the specialties because of the fine work by all the personnel of the hospital. The superintendent is anxious to have the spirit of standardization exemplified in that institution. Take the question of nursing. The nurses here are taught to respect the physicians. When a physician gives an order, the nurse is to carry that order out to the letter, they are courteous in every way. The physicians do not have to wait to do their dressings, the trays are ready and they have sufficient number so that three for four dressing can be carried on at once. The trays have everything on that a doctor needs from the gloves to the bandages. The laboratory department is now working in close cooperation with the surgeons and internists. The x-ray department has been revised and the old equipment replaced with new. The hospital has been painted from the garret to the cellar. The dressing room for the surgeons has been improved. If you do not happen to have your own operating clothes, the hospital has plenty for you. The staff meetings are well organized and there are no favorites in this institution; every doctor who goes there, whether he has one case or twenty, is made to feel that he is the most important person there. Such an institution cannot help but grow. The beds are always full and it is not unusual to be requested to hurry some of your patients along, who are really convalescent. That is Standardization mixed with common sense and that institution cannot help but succeed. When all the hospitals of the state accept that sort of spirit as the dominant spirit of the institution, Standardization will have reached its ultimate goal. This can never occur when one or two men can checkmate the work of the staff in a little private conference with the powers of the institution. These physicians, who practice this back-door diplomacy, block the progress of Standardization ten-fold more than those who occasionally take out a normal appendix or fail to mark down a case record or the type of incision they made in doing a laparotomy.

Tuberculosis Sanatoria. Dr. Pattison, of the National Tuberculosis Association, made his second inspection of the five state hospitals which are operating as tuberculosis sanatoria and completed his report with recommendations that they be given a Class A rating. A Class A rating in this instance does not have to do only with the physicial equipment, but considers also the medical personnel, the administrative staff, the nursing personnel, recreation and teaching facilities for the patients. When such a national organization will give our tuberculosis hospitals a Class A rating, it does seem that we are to be contratulated in this state. At this time it is only just to give credit to the Washington Tuberculosis Association for the wonderful work it has done in assisting in building up these institutions. At the same time one must consider another factor in this work. Our state institutions for the care of tuberculosis are, of course, but one more step toward state medicine.

It might be well for the Association to bear in mind the state law which provides for the erection of tuberculosis hospitals by the counties and any person in that particular county may have treatment in that institution free, or if he is able to pay a reasonable sum the state permits this compensation. When one considers that the state industrial work is rapidly becoming true state medicine, further that the tuberculosis hospitals will soon become of that character and that the venereal, infectious and contagious diseases have already been taken over by the state, one realizes the importance of our own organization working in better cooperation in its various departments.

The Department of Labor and Industries. This brings us to the industrial insurance work and the hospitals of the state. An effort has been made during the past year to secure the cooperation of the Medical Director and the members of the Medical Aid Board. After having many conferences and having placed before the Board data showing the cost of maintenance for the state cases in the hospitals and asking for a slight profit in handling these cases, the Department of Labor and Industries issues a bulletin which must be taken as their answer to our plea. They did not raise the fees in any sense. Little can be expected from the present Medical Director and Board. They are not in sympathy with the doctors, hospitals or the working man who is the patient, but only represent the faction which pays the bill, namely, the employers of the State. Already I have communicated with a number of employees and have shown them wherein they are being deprived of the services of the best medical men and hospitals in the state. It is true that many hospitals are now taking the state cases, but they are giving the same only 50 per cent efficient treatment, the same as they have been giving them for the past five years.

This completes the report of the activities of your committee for the past year.

In the discussion that followed Dr. E. W. Young recommended that the dietitians should have some connection with the hospital staff in order to make Hospital Standardization complete.

Dr. Hoffman said that in Seattle there was a joint meeting of the chairman and secretary of each staff for the purpose of unifying the work done in all the hospitals.

Dr. Whitacre stated that in Tacoma it was the desire to classify surgeons and internists in order to improve the quality of work done.

Dr. Epplen called attention to the fact that another agency entered into Hospital Standardization, namely, the viewpoint of the neurologist and internist and that Hospital Standardization would be incomplete without them.

Tuberculosis Committee: Report read by Dr. Frank Miller, Chairman.

Your committee, and particularly the chairman, being unaccustomed to this kind of work has found it necessary to spend a considerable length of time in studying the field of work and the activities of the various agencies already in the field.

There were 1079 deaths from tuberculosis in this state in 1922. As the number of active cases is estimated as ten times the annual deaths, Washington must expect approximately 10,000 active cases. Besides the various counties and municipalities supporting institutions for the treatment of this disease, we find the National Tuberculosis Association busy with the problem. This organization is represented locally by the State Association with its some thirty county divisions and its many workers, both professional and lay.

The members of your committee have this year, as in the past, rendered every assistance to the unofficial organization. This assistance has been along the lines of publicity, consisting of health talks and lectures on tuberculosis and professional services for patients and suspected patients. The chairman of your committee has been pleased to notice that League officials are frequently discussing with him their policies and their plans for new work, thus giving us the opportunity to make suggestions and to present our attitude as to the proposed work.

One of the outstanding features of the year in connection with the League is a change of plan as to the personnel of the diagnostic clinics conducted by members of this committee under the auspices of the Association. The clinics affected will be those held throughout the state in the smaller cities and towns not covered by a regular diagnostic service. The examinations hitherto have been made by two Seattle physicians, now owning a private sanatorium, but who, when first called upon, were connected with an endowed institution. Naturally such an arrangement has been open to criticism, providing as it does an excellent means of advertising and a wealth of acquaintance amongst patients needing sanatorium care. The League now has declared its intention of adding a full time medical man to their staff who will take over the work of free examinations. It has been promised that this work will be done according to the ethics of consultation practice, all reports going in writing to the family physician and under no circumstances given to the patients.

There are seven sanatoria in the State, five public, one endowed and one private. The greatest accomplishment for the year in connection with these institutions has been the work of standardization carried out by the Standardization Committee. During the year, given between the preliminary inspection and the inspection for rating, much work has been done in the institutions to meet the requirements, none of them being given an unqualified Class A at the preliminary inspection. It is well to consider here the difference between such public institutions and the ordinary general hospital, where the medical staff has so great a say in the conduction of the institution. In the public tuberculosis sanatoria funds are appropriated by laymen who, having to bear the brunt of complaints of the tax burden, are consequently always seeking new ways and places of curtailing expense, and who are unacquainted with the problems of caring for the sick. There has never been a factor which so aided superintendents of such institutions to obtain increased budgets for improvements as this inspection for standardization. Our commissioners have been more than anxious to stand out well in comparison with other institutions in the state, fearing unfavorable publicity if this were not the case. We should keep this respect for the standardization by bringing to these men in an official manner, to hide or to publish, as the case may be, some comment upon their efforts and upon their institutions. Above all there should be no lowering of the standards set by the inspectors, or those having met requirements will not listen to suggestions in the future and those not yet up to standard, if there be any such, will never provide the things other commissioners have provided.

The Tuberculosis Committee has endeavored to bring about a closer relationship and acquaintance between the staffs of the sanatoria. These institutions have been more isolated from the general medical men and from each other than is good. The committee is attempting to have the statistics from institutions gathered in such a manner that they will prove of value to the whole profession. Two of the five public institutions acknowledged their inability to furnish records of 1922 for this meeting to show the condition of entrance of discharge patients and the comparative success of treatment on the three different classifications of disease.

One of the greatest needs in the work today is to do away with the antipathy displayed by the general medical man towards this disease, its diagnosis, its treatment and everything connected with it. There is a reason for free diagnostic clinics and for the close nature of the staffs of tuberculosis hospitals. Probably in no other branch of the practice of medicine is the work of all so uniformly poor as it is in this disease. We feel that this work is for the Tuberculosis Committee. It is well known that only in early tuberculosis is the result of the treatment regularly good, yet we find that only about 16 per cent of the cases admitted to the institutions in which the figures were available last year, came with this stage, while 84 per cent of patients are entering with the further advanced stages, yet in the neighborhood of one-third are giving histories of mistakes having been made in diagnosis. Inasmuch as 50 per cent entering within one month of their diagnosis, it will be seen that the problem at the present time is not the recognizing of early tuberculosis but the recognizing of advanced tuberculosis.

Sputum examinations on these cases would cut the error in the general run of cases tremendously and the committee will emphasize this fact whenever possible. The plan is to be given a trial, beginning in Spokane, of allowing more men the opportunity of using the material present in the sanatoria. It is hoped to get a number of men who will set aside a certain evening each week to be spent at the institution in examination of patients, material being picked before hand to illustrate as near as possible any lesion or physical sign the visitor wishes to study.

The committee is sure that a little time spent in this way will awaken a new interest in this work and will improve the medical practice accordingly.

Child Welfare: Report read by Dr. P. D. McCornack, Chairman.

The Infant Welfare Committee of the Society offers the following report.

After its organization the committee made a survey to determine the number of organizations in the state doing infant welfare work. We found numerous small organizations all over the state doing some sort of work of this nature. Our survey revealed the fact that most of this work was of an inferior quality and much of it in duplicate and to cross purposes.

Through a letter to these organizations we have tried to correlate this work by bringing it under one head. We believe that the State Health Office, The Public Health League, and The Infant Welfare Committee should have control of all work of this sort that is being done in the state. They should be the head to whom all organizations, fairs etc., could appeal for help, literature, films and general directions in their work. We are trying to bring about this correlation.

On discussing this paper Dr. Coe spoke of the value of the State Department of Hygiene but that it was likely to get out of touch with the medical profession, were it not for the Contact Committee.

Conservation of Vision: Report read by Dr. W. F. Hoffman, Chairman.

The work for Conservation of Vision in Washington is progressing very nicely, backed as it is by the impetus of years of work by previous committees.

Ophthalmia Neonatorum is being relegated to a minor place as a cause of blindness. The reporting of cases has been made compulsory and the regulation requiring the use of a prophylaxis has been passed and is now in the hands of the Secretary of State, awaiting only his signature to make it compulsory. The committee suggested the printing of the regulation on the back of the birth certificate, but the Board of Health thought they could bring it more forcibly to the attention in some other way.

The fact that blindness from opthnimia neonatorum has markedly decreased, shows what can be done by persistent effort on the part of the Conservation of Vision Committees.

Industrial accidents still hold their place as a cause of blindness, for, although goggles are generally provided and their use recommended in industrial plants, nevertheless, the men dislike very much to use them.

Wood alcohol still retains a prominent place, its position having been given more or less of a boost by the passage of the Volstead Act, and the prevention of blindness from the use of wood alcohol as a beverage seems to be almost impossible, for legislation seems of no avail, as fools rush in where angels fear to tread. There are even a great number of people who believe that the poisonous properties of wood alcohol can be eliminated or neutralized by the addition of drugs.

School children: One of the great works for conservation of vision at the present time is the furthering of efforts for the inspection and care of school children, with a special reference to ocular prophylaxis. It has been estimated that over 20 per cent of children in public schools have defective vision. A recent government survey, covering fifty large cities, gave a percentage running from 20 per cent to 27 per cent, averaging about 25 per cent.

Children's eyes should be examined early in their school life, glasses fitted if necessary, and sight saving rooms should be established at the public schools of every city large enough to warrant them, as there are a large number of children whose eyes will not permit them to keep up with the work in the regular school classes, or whose eyes would be greatly injured by attempting to get their education with the regular school equipment.

It will require considerable educational work among parent-teacher associations and kindred civic organizations to put this over, and the committee recommends as an assistance in this work, and as a part of a general health educational program, the purchase of a couple of reels of moving picture film which could circulate throughout the state and be used in the various towns and cities at meetings where public health programs were being given. We have had an opportunity to borrow and use some of these films and feel that they are very effective, and can be replaced by still pictures or talks.

The Public Health League has done a great deal to forward the work of this committee and can be used to assist and coordinate the work of all committees. It would be a satisfactory repository for a library of films and would assist greatly in arranging places and dates for public health programs.

Committee On Medical Aid Fee Bill: Dr. Hunter made an informal report, saying that the other two members of the Committees, Drs. Horton ana Sharples, recommended a general increase of 25 per cent, in all the fees. He disagreed with the majority of the committee but did not offer a minority report, for the reason that his report would be presented in he report of the Indusrial Relations Committee.

In the discussion that followed, Dr. Sharples thought it would pay the state to obtain the very best medical and surgical attendance, and that the present fees were inadequate for such services.

Dr. Hunter called attention to the fact that before the Medical Aid Act the physician obtained very little from this class of cases.

Dr. Marshall was of the opinion that a 25 per cent increase would be irrational and pointed out that few physicians collected more than 60 per cent of their charges; that in this work they received 100 per cent of their charges.

Dr. Bird, in discussing, said that at the present time the Medical Aid Fund of the State of Washington has a balance of but $10,116.43. These figures are up to, and including, the 18th day of September 1923. Two years ago, at this time, there was over $160,000 surplus in the Medical Aid Fund.

Because of the fact of the great deficiency in two particular classes of industry, namely, the logging and coal mining industries, it was necessary to establish new rates of medical aid in order to cover the deficit which had occurred in these two classes in the cost of medical aid during the past two years, which amounts to over 20,000. The medical aid rate in coal mining and logging has been raised from 2½ cents to 4 cents per day. From July 1, 1921 to July 1, 1922, there was expended from the Medical

Aid Fund, for surgical and hospital services the sum of $325,681.36. The greater number of these cases of course, came under the schedule which went into effect Oct. 1, 1919 and expired Oct. 1, 1921.

The fee schedule which is now in effect and which was adopted by the Department of Labor and Industries as effective Oct. 1, 1921, following the action taken on it by your body at the convention in Seattle, in September 1921, materially raised the cost of medical aid and from July 1, 1922 to July 1, 1922. All of these cases, with the exception of eighteen or twenty, having hung along were paid on the rate set in the new schedule. During this period there was expended from the Medical Aid Fund for surgical and hospital services the sum of $505,370.64, an increase of almost $200,000.

The amount that is spent for medical aid in the treatment of injured workmen certainly more than compensates for the results which are obtained, as our statistics will show to any one interested enough to look up the matter, this being based on the permanent partial disability awards which are made.

The industries of this state cannot afford to have an increase in the cost of medical aid, and the cost to the industries at this time proved to be a bone of contention at the last safety meeting which was held in Olympia, Sept. 11, 1923, but in order that the bills of doctors for treatment of injured workmen can be met and without lowering the fee schedule, which was strongly urged by many of the employers, it was necessary to raise the two classes afore mentioned in order to cover the deficit and not to lower the fee schedule. Any action taken by your honorable body, such as a further raise in this schedule, which is more than fair, and is the highest in the union with the exception of one state, namely Ohio, and for that matter many of the fees contained therein are greater than in the Ohio schedule, would be suicidal action on the part of the surgeons of this state, because there would be a counter attack on the part of the employers, and certainly they would not agree to what they have termed the looting of the medical aid fund.

Were it possible for this department, or for me as Chief Medical Adviser, to direct each case which comes into the department to the care of one of the many high class surgeons of this state, the cost to the employer would be materially decreased in he amount of the permanent disability awards which are made and the cost of medical aid would be materially decreased, because of the fact that in a great number of these cases a good and early result would be obtained and thuswise it would be possible to raise the schedule.

The law specifically provides that an injured workman has the right of a physician of his choice. Ever since I have been in the department I have been at logger-heads with the drugless physicians of this state by refusing to recognize sanipractors, chiropractors and various other so-called practitioners, who are not recognized by our profession, and have consistently ordered the rejection of their bills when presented. You, however, are well aware that there are many of the physicians of our own profession who are unable to cope with many industrial cases which confront them, but nevertheless they will proceed to treat the case and, when the man is declared surgically healed, he is called to Olympia to be examined and it is found that open operative work must be performed, which necessitates an expenditure of a large sum of money for both surgical and hospital attention, which causes a further drain upon the medical aid fund.

The schedule which is presented to you now for your consideration is a decided improvement on the schedule which was approved by your body in September, 1921, and this thought must be brought to your attention, which perhaps many of you have overlooked, that when you have charge of a state case you are assured that your bills will be paid in conformance with the fees set forth in the schedule. On a private case, and I speak from long experience, you are most fortunate, if you collect sixty-six and two-thirds per cent of your outstanding bills.

In the month of August, 1923, $46,100 was expended for surgical and hospital attention. Each month of the year there is between $45,000 and $50,000 awarded to the surgeons and hospitals of this state for the care of state medical aid patients, the majority of which goes to the surgeons. The ratio being something like 4 to 1.

After further discussion, the majority report of the committee, recommending a 25 per cent increase, was ordered laid upon the table and the committee discharged with thanks.

Dr. Hunter, chairman of the **Industrial Relations Committee,** presented and discussed the following proposed fee schedule to be used in connection with state cases:

AMPUTATIONS

Ankle joint	$ 60.00
Arm, forearm or hand	50.00
Elbow joint	50.00
Finger or toe	20.00
Foot	60.00
Knee joint	60.00
Leg	60.00
Penis	75.00
Shoulder joint	75.00
Thigh—above the lesser trochanter	125.00
Thigh—below the lesser trochanter	70.00
50 per cent for additional amputations	50.00

Infected cases $1.00 additional for each dressing.

In all cases covered by flat fee no additional fee shall be made except in cases where infection is present.

In all cases of more than one amputation the fee shall be the major one, plus 50 per cent of the fee prescribed for each of the others as herein classified.

FRACTURES

Acetabulum	$ 25.00
Carpal bone	20.00
Clavicle	35.00
Clavicle (greenstick fracture of)	25.00
Clavicle (open operation)	75.00
Coccyx (non-operative)	20.00
Compound fractures, not infected	25 per cent plus
Femur	125.00
Femur—greater trochanter, without	

displacement	50.00
Fibula	25.00
Finger	20.00
Forearm—Colles'	35.00
Forearm—one bone	35.00
Forearm—both bones	60.00
Forearm—olecranon process	30.00
Forearm—styloid process	25.00
Glenoid fossae	25.00
Jaw—without splint	20.00
Lower leg—both bones, including Potts	75.00
Lachrynal bone	5.00
Malar	10.00
Metacarpals (one or more)	20.00
Metatarsals (one or more)	20.00
Nasal	10.00
Operation for wining of bones or plating	25 per cent plus
Os calcis	25.00
Patella	25.00
Pelvis	70.00
Pubes, Ilium or Ischii, without displacement	35.00
Ribs, one or more	10.00
Sacrum	15.00
Scapula	35.00
Scapula—coracoid process	35.00
Scapula—acromion process	35.00
Sesamoid of toe	10.00
Skull (unoperative)	50.00
Skull (decompression)	75.00
Skull (elevation)	75.00
Spine	50.00
Sternum	10.00
Tarsals (one or more)	35.00
Tibia	40.00
Tibia—internal malleolus	25.00
Upper arm	75.00
Upper arm—internal or external condyle	25.00

Fifty per cent for additional fractures.

Infected cases $1.00 additional for each dressing.

In case of more than one fracture, except in cases where there are **multiple fractures of same bone,** the fee shall be the major one, plus 50 per cent of the fee prescribed for each of the others as herein classified. In all cases covered by a flat fee no additional award will be made except in cases where infection is present.

DISLOCATIONS

Ankle	$ 25.00
Clavicle	25.00
Elbow	25.00
Finger or toe	5.00
Hip	50.00
Jaw	10.00
Knee	25.00
Metatarsals	15.00
Ribs, (one or more)	10.00
Shoulder—primary	25.00
Shoulder—subsequent	15.00
Subluxation sacroiliac	25.00
Subluxation sacroiliac (Goldwait method)	50.00
Tarsal bones	15.00

In case of more than one dislocation the fee shall be the major one plus 50 per cent the fee prescribed for each of the others as herein classified.

EYE FEES

Corneal ulcer—cauterization of	$ 5.00
Enucleation or evisceration	50.00
Extraction of traumatic cataract	50.00
Epiphora	50.00
Needling, one or more operations, if successful	50.00

(Otherwise, extraction of cataract fee will prevail)

Ophthalmoscopic examination	5.00
Removal of forein body (intraocular) when successful	50.00

(Otherwise, if enucleation is done, one fee)

Must have consultation before using giant magnet; also must have consultation before enucleating eye that has any sight in it.

Iridectomy, including subsequent treatment	50.00
Iris prolapse of and replacement of pillars	75.00
Removal of foreign body in the cornea at office, incl. aces	3.00
Pterygium, removal of	25.00
Treatment in office when not covered by a flat fee	2.00

NOSE FEES

Removal turbinate, inferior	$30.00
Submucous resection	50.00

MISCELLANEOUS FEES

Abcess, incision	5.00
Anthrax, excision or cauterization	20.00
Artery, ligating (important)	25.00
Artery, ligating (small)	10.00
Aspirating bursa	5.00
Anesthetic, administration, major	10.00
Anesthetic, administration, minor	5.00
Anesthetic, local injected subcutaneously	3.00
Assistant at operation, major	10.00
Assistant at operation, minor	5.00
Arthrodesis (ankylosing a joint) (operative)	
Ankle joint	75.00
Elbow joint	75.00
Knee joint	100.00
Arthrodesis (non-operative) 50 per cent of the operative fee.	
Autogenous bone graft, for nonunion or malposition	175.00
Autopsy, complete, with written report (when ordered)	25.00
Autopsy, attending but not performing (when ordered)	10.00
Blood transfusion (donor)	25.00
Blood transfusion	25.00
Casts (when ordered by medical division as treatment)	
Arms or legs	5.00
Body or pelvis, including legs	10.00
Cellulitis, $35.00 first two weeks and $1.00 per dressing thereafter.	
Chest (punctured wound involving pleura and lung)	50.00
Coccyx (removal of)	25.00
Complete physical examination and report by other than attending physician	5.00
Complete ruptured urethra with an open operation	75.00
Epididymectomy	50.00
Fistula (operating anal fistula)	75.00
Hemorrhoids, traumatic	50.00
Herniotomy	75.00
Herniotomy, bilateral	110.00
Hydrocele, operation of	75.00
Injection of antitoxin for tetanus (subeutaneously) (each treatment)	3.00
Introducing catheter	2.00
Intubation	25.00
Joint mice, lateral incision	50.00
Laminectomy (special operation)	100.00
Lunacy, examination in, inclu. written report	5.00
Mastoid, traumatic	75.00
Mileage (one way) per mile, beyond city limits	.75
Mileage (one way) per mile, night	1.00
(Night meaning 9 p. m. to 7 a. m.)	
Mileage (in cities) per mile, when beyond 3 miles (one way)	.75
Night calls not paid for when covered by a flat fee	3.00
Office, hospital or home visit, when not covered by a flat fee (first visit)	3.00
Subsequent home visits when not covered by a flat fee	2.00
Subsequent visits at office or hospital when not covered by a flat fee	2.50

Nephrectomy	125.00
Nephropexy	75.00
Nephrotomy	100.00
Nerve, freeing of by dissection for relief of pressure from scar tissue	50.00
Neuroma, removal of, amputation neuroma not inclu. fingers	50.00
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Operations, minors, repair of small wounds, including suturing	5.00
Operation requiring repair of abdominal viscera and subsequent treatment	125.00
Open operation for reduction of fracture 25 per cent plus.	
Orchidectony	50.00
Osteomyelitis of femur	75.00
Patella, open operation	100.00
Paracentesis, thoracis or pericardii (special operation)	15.00
Physiotherapy treatments (when ordered by the Med. Div.)	2.00
Plates, removal of	15.00
Pulmotor work, per hour	15.00
Rib resection	50.00
Sequestrum, removal of, large	50.00
Sequestrum. removal of, smal	35.00
Salvarsan injections $7.50 each, including salvarsan used.	
Mercurial injections $2.50, including mercury, must be intramuscular. Maximum fee allowed including salvarsan and mercury used	65.00
Skin graft, large area, Tiersch or Reverdin method	50.00

Dr. Whitacre spoke in recommendation of Dr. Bird's work and moved that the report of the committee be accepted and that the above schedule be approved. The motion was seconded and adopted.

(To be concluded)

KING COUNTY MEDICAL SOCIETY

Pres., C. E. Hagyard, M.D., Secty., R. F. Hain, M.D.

The regular meeting of King County Medical Society was held at Public Safety Building, Seattle, Wash., at 8:15 p. m., Nov. 19, 1923, with Pres. C. E. Hagyard in the chair.

Drs. A. H. Winkel and J. G. Byrne were elected to membership.

The applications of Drs. J E. Clark, L. L. Bull, H. Sugata, L. W. Whitlow and H. F. Thiel were read.

PROGRAM

Diagnosis of Pulmonary Tuberculosis. Dr. J. E. Nelson. Statistics compiled in United States and Canada show that the medical profession is incorrectly diagnosing over 50 per cent of cases. Importance of personally taking the history was emphasized; items of previous history noted. Details of symptoms mentioned that may be neglected; physical examination, with laboratory and x-ray examinations, elaborated. Assurance of absence of tuberculosis should not be given in one examination.

Discussion by Drs. W. S. Griswold, John Hunt and F. W. Carroll.

Routine Wassermann Tests. Dr. D. H. Nickson. The discovery of Wasserman has revolutionized our ideas as to prevalence of syphilis. In examining recruits for the army it was found 16.77 per cent were undiagnosed syphilitics. It is stated that 6.64 per cent of men in civil life, 20 to 30 years of age, are syphilitic. A larger percentage is found in tuberculosis than any other disease, one investigator reporting 23.28 per cent.

Discussion by Drs. L. J. Palmer, S. W. Griswold, W. R. Jones.

PIERCE COUNTY MEDICAL SOCIETY

Pres., J. P. Kane, M.D.; Secty., W. B. Penny, M.D.

The regular meeting of the Pierce County Medical Society was held in its rooms, Tacoma, Wash., Nov. 13, 1923, president J. P. Kane in the chair. Minutes of the last meeting read and approved.

PROGRAM

Side Lights on Medical History—James Gerrit Van Zwaluenburg, Roentgenologist, Dr. W. H. Ludwig.

Shall Doctors Advertise? Dr. E. A. Rich. This paper was a demonstration showing the amount of paid advertising carried in the last year by different members of the society, no names being mentioned.

Ability and Personality vs. Printers' Ink. Dr. Grant S. Hicks. The above paper was discussed by Dr. Christen Quevli.

On motion of Dr. Hyslin, it was voted that the question of periodic health examinations be brought before the next meeting for discussion.

The applications of Drs. R. W. Monahan, S. L. Blair and E. D. McCarty having been approved by the Board of Trustees, they were elected to membership in the society. The application of Dr. Anna Wallace was disapproved by the Board of Trustees.

The following changes in the Constitution and By-Laws were recommended by the Board of Trustees and approved by vote of the society:

CONSTITUTION

Under Article 6 there shall be added Section 2, reading: Any paid advertising in the public press by any member or group of members of the Pierce County Medical Society will be considered unethical, except

(a) A physician newly locating in Pierce County may carry notices of such location for one month, said notices to contain only the name, address, telephone number and practice or specialty followed;

(b) Any physician on leaving his practice for an extended absence may run a notice to that effect for three days at the time of leaving and announcement of return for three days when returning to his practice, such notice to contain only the name, date of leaving or return, address, telephone number and practice or specialty followed;

(c) Any physician on changing his office location or telephone number may run notice of such change of address or telephone number for a period not exceeding one month.

BY-LAWS

In Article 1, Section 6, there shall be added the words "A four-fifths vote of the members present at any regular meeting shall be necessary for the expulsion of a member from the society."

SPOKANE COUNTY MEDICAL SOCIETY

Pres., C. M. Doland, M.D., Secty., G. H. Anderson, M.D.

The regular meeting of the Spokane County Medical Society was held at Spokane, Wash., Nov. 8, 1923, in the assembly room of the Old National Bank. Minutes of the previous meeting were read and approved. A motion was passed that the regular order of business be dispensed with and the scientific program be presented.

Pathology of the Heart. Dr. R. L. Benson, Professor of Pathology, Oregon State Medical School, gave the first of the Epplen Lectures on this subject.

Dr. H. S. Holmes, of Elk, was elected to membership in the society.

A special meeting of the Spokane County Medical Society was held on Nov. 9 in the assembly room of the old National Bank Building. This being a special meeting, the usual routine of business was dispensed with.

Coronary Obstruction and Its Relation to Cardiac Death. Dr. R. L. Benson delivered this, the second Epplen lecture.

The regular monthly clinical meeting of the Society was held Nov. 22, at 8:00 p. m. at the Deaconess Hospital. The minutes of the previous meeting were read and approved.

Dr. Pennock reported a case of pyonephrosis with bladder stone, and showed the kidney and stones removed at operation.

Dr. Reid reported a case of intestinal obstruction due to adhesive bands.

Dr. Suttner showed a patient who had been operated on for penetrating gastric ulcer, the ulcer having been resected. Pathologic specimen was shown.

Dr. Seaberg reported two cases, one of chronic cholecystitis and the other of acute appendicitis which was associated with calcified mysenteric glands which made some difficulty in the differential diagnosis between it and kidney stone.

Dr. Welty reported a case of peritoneal abscess, in which local anesthesia was necessary because of marked myocarditis.

Dr. Langworthy moved that the society endorse the plan of the American Medical Association in their campaign for periodic health examinations. Motion carried.

PUGET SOUND ACADEMY OF OPTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., D. H. Bell, M.D.; Sec'y, J. H. Harter, M.D.

The Aacademy held its meeting in Seattle, Nov. 20, at Virginia Mason Hospital. The paper of the evening was by Dr. W. G. Cameron, of Tacoma, on "Metastatic Infection of the Eye and Brain." The paper was based on the report of a man, 35 years of age, who had pneumonia, during which time he coughed up much pus. Eighteen months later he developed severe headache and inflammation of the eye, which ten days later presented symptoms of pan-ophthalmitis. He became delirious and died two weeks later. Autopsy showed an abscess 3 c. m. in diameter in the right parietal lobe of the brain and a walled-off abscess in the lower lobe of the right lung. It appeared that both abscesses and infection of the eye were metastatic from the lung. The writer concludes that with a suggestive history and newer methods of diagnosis it may be possible to localize such brain lesions. The paper was discussed by Drs. J. T. Dowling and H. V. Wurdemann.

Dr. J. E. Clark presented a boy of 14 years, whose left eye had been penetrated by a BB shot, 2 mm. internal to limbus, carrying in a ragged piece of iris. Examination disclosed lens clear, anterior chamber blood tinged and vitreous presenting. X-ray showed shot at lowest position of vitreous. At operation wound was enlarged and shot removed with lens loop. About 10 per cent of vitreous was lost. Wound closed by silk suture. Result blindness in eye and later enucleation recommended. Paper discussed by Drs. H. V. Wurdemann and R. W. Perry.

IDAHO

POCATELLO MEDICAL SOCIETY

Pres., C. W. Pond, M.D., Secty., W. F. Howard, M.D.

The regular meeting of Pocatello Medical Society was held at Pocatello, Ida., Nov. 23, eighteen members being present.

Dr. H. C. Irwin reported a case of myelogenous leukemia and gave a review of new literature on the subject.

Dr. H. A. Castle reported an unusual case of bacillus Friedlander infections.

Dr. F. M. Sprague reported his trip to the Tristate meeting at Des Moines, Ia. He emphasized the belief that any cripple may be improved.

PUBLIC HEALTH LEAGUES

WASHINGTON

AIDS TO THE MEDICAL PROFESSION

The Public Health League of Washington expects, in co-operation with the Metropolitan Life Insurance Company, to begin within the next sixty days the distribution of the "Washington Health Builder," a booklet containing twelve health articles. The material for this publication was obtained from the chairmen of the various contact committees of the Washington State Medical Association. One article was prepared by a Red Cross official and one was written by the Antituberculosis Society. The articles were edited in the League office.

The "Washington Health Builder" will have a circulation of 50,000. The articles are written in "lay" English and such subjects as "Your Family Physician," "The Community Debt," "Child Hygiene," "Good Teeth," "Cancer" and others are covered.

In order to better reach the public on questions of medical import, publicity, semi-weekly in appearance, has been established with fourteen Washington dailies. In the Tuesday and Friday issues of these papers the League will have a definite department. A number of physicians are making contribution of suitable articles for such publication. This new departure in publicity, supplementing the weekly press service initiated by the League last spring, makes possible the reaching of most of Washington's population with scientific health data.

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The League is urging physicians to take courses in public speaking for the winter months. Efficient instructors are available in most of the cities of the state. To reach closer contact with the public and to attain that community leadership required, it is suggested that every physician equip himself with that power of public utterance necessary. The best trained man sometimes is the least able to get his message across to the public. In the campaign looking toward a better understanding between the scientist and the public there is demanded more activity on the part of the technically trained man, that he may be able to give his message, whether it pertain to health issues or to something else, of general community interest.

Reports come of renewed activity on the part of the Washington Antivivisection Society, which has been responsible in the last two years of flooding the state with 300,000 pieces of literature, covering their propaganda against animal experimentation. It is understood that funds are now to be sought preparatory to making Washington State a battle ground for 1924. Congressman Albert Johnson is an honorary vice-president of this society.

Plans are underway looking toward a basis of understanding between the League and the Washington State Pharmaceutical Association. An informal conference was held recently between the managerial board of the association and some of the officers of the League. Committees are to be appointed to meet at some not distant date, when, it is believed, an agreement will be reached of mutual advantage.

With the physicians and dentists working with the pharmacists in harmony on problems of legislation and united on educational and publicity policies, fine results should be attained. At the last session of the Washington legislature there was some difficulty manifested due to a lack of understanding. Under the proposal now being considered it is expected that the League will offer a means of professional cooperation that should mean greater strength in legilsative matters and insure better health laws for the state.

The League, as a part of its education campaign, has been represented before the Rotary, Kiwanis, Lions and other luncheon service clubs in the different cities of the state by the executive secretary. He has spoken on the topic, "Human Values." In this address the value of the scientifically trained man, what he has accomplished in the drive against disease, what he has done to protect human life and his self-sacrifice have been stressed. A plea is made for more public cooperation with the physician that the life span be extended. It is expected that every city in the state will have an opportunity during the year to hear this health message.

IDAHO

PUBLIC HEALTH PUBLICITY

One of the objectives of the League program is to conduct a publicity campaign in order to bring about a closer understanding between the medical profession and the laity. In order to bring about a better understanding as to what publicity will do, it might be well to make a review of what was accomplished along this line in the earliest stages of publicity.

Publicity was successfully used long before the art of printing. The most famous publicity man that ever lived, either from a literary or commercial standpoint, was Julius Cesar. Publicity, however, was not a new idea with him, but he followed the same principles of previous rulers, who hired scribes or historians to write up their conquests of battles and noise them about the country. These publicity reports dwelt upon the number of men, their ferocity, their strength, their valor and their deeds of courage. This enabled Cesar to overcome many tribes without battle and the incidental cost and loss of life. He told the people what he had and what he could do. You are familiar with history, but did it ever occur to you in this light before?

In discussing education, a certain English educator was asked when a publicity campaign of this kind should commence. Without hesitation he replied. "a generation before they are born." It is an actual fact that it takes ordinarily twenty years for new health principles to permeate the thoughts of the whole mass of people under the present system. Do you know that the public is judging the medical profession on what was done twenty and twenty-five years ago? Is it any wonder that the people and legislator refuse consideration to health legislation? It is clearly a matter of education.

BOOK REVIEWS

Edited by KENELM WINSLOW, M. D.

Abt's Pediatrics. By 150 specialists. Edited by Isaac A. Abt, M. D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. In eight octavo volumes totaling 8000 pages with 1500 illustrations, and separate desk index volume free. Now ready. Volume I containing 1240 pages with 284 illustrations. Volume II containing 1025 pages with 180 illustrations. Philadelphia and London: W. B. Saunders Company, 1923. Cloth $10.00 per volume. Sold by subscription.

Judged by the first two volumes, this is an epochal work. It consists of a series of monographic treatises on various subjects of pediatric interest, and will undoubtedly comprise a veritable encyclopedia of pediatric information. The first volume orients pediatrics in the field of preventive medicine, prac-

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tically a third of the entire volume being significantly devoted to chapters on hygiene. The opening chapter on history of pediatrics contains a wealth of material on the social status of the child since ancient times. The chapter on anatomy of the child and infant is an excellent summary. and a scholarly presentation of the chemical and physical phenomena of growth is of more than purely medical interest. The numerous recent investigations of energy metabolism in infancy and childhood are brought together, and the physiology of digestion and absorption and of "metabolism beyond the intestinal wall" is fully discussed.

The second volume is partially devoted to further presentation of some of the more general aspects of pediatrics. Hess gives his valuable ideas relative to premature infants. Brenneman's chapter on artificial feeding presents merely practical general procedure, and no confusing detail. He solves the raw milk-pasteurization question by advocating boiling of fresh, clean raw milk in infant feeding, with early mixed feeding. Section headings and a good index make the material readily available despite its great volume.

Mohr.

Habitual Constipation. Its Causes, Consequences, Prevention, and Rational Treatment. Set forth in non-technical language. By Ismar Boas, M.D., Professor of Medicine in Berlin. Translated by Thomas L. Stedman, M.D., formerly editor, The Medical Record, etc. Cloth. 299 pp. Funk and Wagnalls Company, New York and London, 1923.

This book is written apparently for the intelligent laiety in order that it may assist the physician in his treatment of them, much as it has become customary to educate patients with diabetes by books to facilitate the carrying out of professional treatment. This mode of teaching is done very well, as one would expect from so able a clinician as the writer, who goes into all phases of the subject indicated in the title. Some points may be of interest to the profession. The author values highly the use of milk sugar as a laxative, both in children and adults. This may be added to milk to counteract its constipation effect, or added to food, as cereals, coffee or fruit; three teaspoonfuls daily for children and as many tablespoonfuls for adults. Its freedom from pronounced sweetness is a great advantage. The avoidance of meat and fish and the use of vegetables, butter, sugar, eggs, milk and coarse bread is the prophylactic diet advised, especially in childhood. The writer does not disapprove of enemata in chronic constipation affecting chiefly the rectum, and finds no harm from their continuous use, providing the amount is no greater than a pint.

Petrolatum is highly thought of, particularly with sweet almond oil two or three times weekly. The admixture of milk sugar and sulphur is recommended for piles. The treatment is of course largely confined to special diets but drugs are indicated at times, more appropriately in the aged. In colitis Boas favors the use of petroleum oil. The curious circumstance to the reviewer is the omission of what to him appears the most valuable agent of all in chronic constipation, i. e. agar agar. With this one may avoid the unpleasant habit of dieting and yet secure an effect unequaled by the use of the more efficiently boresome and beastly diet.

Winslow.

Diathermy and Its Application to Pneumonia. By Harry Eaton Stewart, M. D. Attending Specialist in Physiotherapy, U. S. Marine Hospital, N. Y., etc. With 45 illustrations and 15 charts. 210 pp. $3. Paul B. Hoeber. New York. 1923.

The author states there are certain pathologic conditions occurring in practically every type of practice in which diathermy has proven of great value. An explanation is given of the current used in this work and the general diathermy technic is explained in detail, showing that it is entirely different from ordinary heat when applied by this method, and that its effect upon the tissues is totally different from other types of external applications. The heat from diathermy penetrates the body, affecting the internal organs. In pneumonia the pulmonary capillaries and lymphatics are dilated, permitting a more active circulation. It is suggested that to some extent the pathologic organisms may be destroyed or reduced. A series of case histories are detailed, showing reduction, relief from pain, disappearance of cyanosis in a few hours after the application of this method. Temperature begins to drop in a few hours with termination by lysis. The results tabulated from several hospitals show a very small proportion of deaths, much below the ordinary rate in lobar pneumonia.

Smith.

Clinical Diagnosis. By Laboratory Methods. A Working Manual of Clinical Pathology. By James Campbell Todds, M.D., Professor of Clinical Pathology, University of Colorado. Fifth Edition, Enlarged and Reset. Octavo of 762 pages with 325 illustrations, 29 in colors. Philadelphia and London: W. B. Saunders Company, Cloth, $6.00 net.

Rarely does one find a book on laboratory diagnosis which alike meets the needs of novice and accomplished diagnostician. Usually that which troubles most the novice are errors of technic, whereas to the accomplished technician this is an old story and it is the differential details of like objects which give him the greatest concern. The needs of each have been so well met in this work that one surmises it has had the benefit of student criticism under the author's own supervision thru the five editions that have been issued. This has resulted in an exactness of detail and clarity of expression hardly to be attained under any other form of criticism and correction. For one who, unassisted is treading his way thru the maze of laboratory technic, the book can scarcely be excelled. For the advanced technician there is much that is helpful. All the recent advances in laboratory diagnosis are incorporated into text; the illustrations are excellent and the entire work is of the first order.

West.

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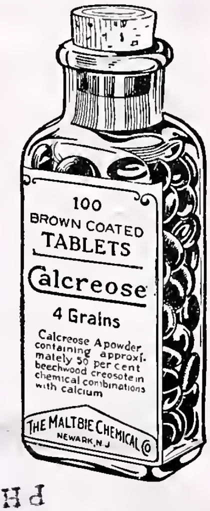
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